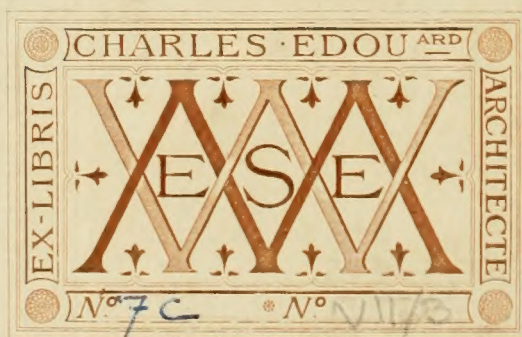


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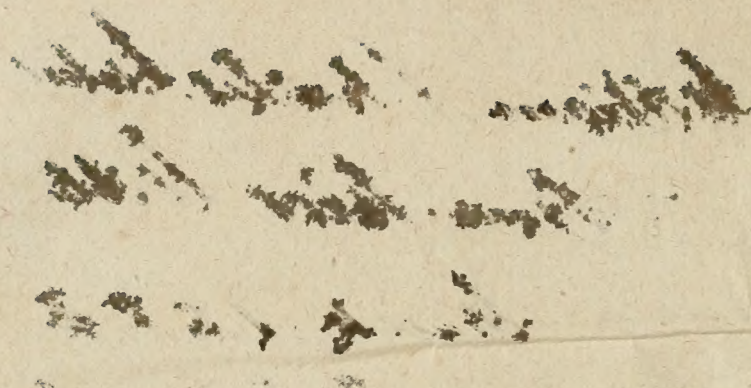
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William. Charles. White

From Miss White

March 1882



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OR, A
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1803.

FOR BARNARD, TAYLOR, AND SON, 10, BARNARD STREET, LONDON.

P R E F A C E.

WHEN we consider the variety of channels through which literary Improvements are diffused to the Public, it appears a matter of astonishment that, while the Professors of Literature have monthly increased their intellectual treasures, the Architects, Surveyors, Carpenters, and Masons, have been unnoticed, and passed by as unworthy of the Instruction or assistance of those who are eminent in their respective professions. Whence this omission could proceed, it is not easy to investigate; but as it is time that this tribute should be paid, a set of Gentlemen have formed themselves into a Society to promote the improvement of Architecture. Each of them has dedicated his labours to that particular department, in which he has been principally engaged, and in which he has obtained the palm of excellence.

Architecture, or the art of erecting edifices, is, doubtless, of very great antiquity; and was, perhaps, preceded only by agriculture itself: Hence Theodore calls the latter the eldest sister of Architecture. The excessive heats of summer, and severity of winter, the inconvenience of rain, and the violence of wind, soon instructed mankind to seek for shelter, and provide themselves with proper retreats, to defend themselves against the inclemency of the weather. But these at first were only small huts, built very rudely with the branches of trees, and very indifferently covered.

In the time of Vitruvius, they shewed at Athens, as a curious relic of antiquity, the roof of the Areopagus, made of clay; and at Rome, in the temple of the Capitol, the cottage of Romulus thatched with straw. After these rude essays, buildings of wood were introduced, and these suggested the ideas of columns and architraves. But the workmen became every day more industrious and more expert. Instead of those slight huts which satisfied them at first, they began to erect great walls of stone and brick upon solid foundations, and to cover them with boards and tiles. And, in process of time, their reflections, founded on experience, led them to discover the just rules of proportion.

Moses informs us, that Cain built a city. Asia was therefore the cradle of Architecture, there it had its birth, and there it attained a considerable degree of perfection, and thence it spread into other parts of the world. It is indeed to be lamented, that not one single Treatise, written by the Greeks upon Architecture, has reached our hands. The only books we have of theirs upon the subject, are the structures of those antient masters still subsisting, whose beauty is universally acknowledged, and which have been the admiration of all good Judges. These structures are superior to all the precepts they could have left us. The Romans borrowed the art from the Greeks; and under Augustus, when good taste universally prevailed,
carried

P R E F A C E.

carried it to a great degree of perfection. But it fell with the Western empire, and was not recovered for the space of twelve centuries. In the two last centuries, the Architects of Italy, England and France, employ'd themselves wholly in retrieving the primitive simplicity and beauty of antient Architecture.

Every thing in Architecture is, or should be, proportioned to the bulk, strength, delicacy, richness, or simplicity that is required. Such we mean to represent every article in the course of this Work. The Public may be assured that the Gentlemen concerned in this performance, will spare neither labour or expence to render it universally useful; and they flatter themselves they are not unequal to the task they have undertaken.

Architects, in general, have, in their publications, considered the magnificence of building, rather than its use; it shall be our task to unite both; for architecture cannot be more grand than it is useful; nor is its dignity more to be considered than its convenience.

Though it is our intention to take the pupil by the hand, and lead him through every branch of Architecture, till he attains the highest degree of perfection in that noble science; yet, in order to render it worthy the attention of every one connected with it, we shall in every number give something that may be useful to adepts in the science, as well as to those who have but just entered upon the study of it. We shall, indeed, in each number, endeavour to introduce something in the common way, something in a taste superior to that, and something elegant and superb. By pursuing this method, every class of our Readers will find something to instruct and entertain.

This Performance will consist of two parts, viz. theoretical and practical. The theoretical parts shall consist of such instructions as are necessary to form the complete Architect; and the practical part shall furnish Plans, Elevations, Sections, &c. with their Explanations, as models for the practical Builder.

The two parts are separately paged, that, at the conclusion of the Work, they may be bound separate: and we flatter ourselves, that the Purchasers will then be possessed of a Complete Body of Theoretical and Practical Architecture.

As we propose to begin our Theory with the most simple instructions, and advance progressively to the sublime parts, we propose, as a foundation, to give an alphabetical description of all the terms of art which are used in Building.

A L P H A -

ALPHABETICAL DESCRIPTION
OF THE
TERMS of ART which are used in BUILDING;
FORMING ALSO A COMPLETE
BUILDER'S DICTIONARY.

ABACUS, the superior member of the capital, to which it serves as a kind of crown, on which the architrave rests; terminating the column with its capital at the top, as the Plinth, another square piece, does with its base at the bottom. It is said the original of the Abacus was a square tile, laid over a basket, round which leaves of the Acanthus or Bear's breech grew; whence the Corinthian capital was derived. But the Abacus is certainly of earlier origin. It is well known, that the Doric order was long prior to the Corinthian; and there is an Abacus on that in the remains of the Parthenion at Athens, though the columns have no base. It represents a tile indeed in the Corinthian order, but its four sides are segments of circles. In the earliest instances, it served only to give breadth to the top of the columns, and a level support to the entablature. For this reason we see the Abacus of the Doric capital, very large in the most ancient buildings. In the infancy of Agriculture, trunks of trees were raised upright for columns, and others laid across them to bear the roof. The Abacus was then a square piece, added to the top of the column, to support those others more conveniently. The Abacus was then made square and plain on the sides, as in the ancient Doric; and in the Tuscan, added by the Romans; but in the Corinthian and Composite, it is altered. Its four sides are hallowed or arched inwards, and it is decorated in the center with a flower or other ornament. In the Tuscan order, the Abacus is of a great thickness, and is called, by some the dye of the capital; in the later Doric, a cymatium is sometimes put over it, so that it loses even its place: and in the Ionic, it is wrought with an oval crowned with a fillet; or it is composed of a *cima reversa* and fillet only. In the Tuscan order, the Abacus is of the same form with the plinth of the base. In the richer orders, it loses its native form, the four sides or faces of it being arched or cut inwards with some ornament as a rose, or other flower, the tail of a fish, &c. in the middle of each arch. Others tell us, that in the Corinthian and Composite, it is composed of an ovolo, a fillet, and a cavetto. Andrea Palladio, in the Tuscan order, gives the name of Abacus to the plinth above the echynus, or boustin; which he says is usually

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called

called a dado or dye, from its form, and is one-third of the whole height of the capital. He also describes the Abacus of the Corinthian order to be one-seventh part of the whole capital, divided into three parts, the uppermost of which is a boultin, and one-third of the next third below is the fillet, and the remaining part below, which is one and two-thirds, is the plinth and the Abacus. The Abacus is not always restrained to the capital of the column, Scamozzi using it in a very different sense; viz. a concave moulding in the capital of the Tuscan pedestal.

ABREUVOIR, or ABREVOIR, in Masonry, signifies the joint or juncture of two stones, or the space or interstice to be filled up with mortar or cement.

ABUTTALS, (from *Aboutir*, fr. to border upon) the buttings and boundings of land, either to the east, west, north, or south, shewing on whatever lands, streets, highways, &c. the several extremes abut or terminate. Camden observes, that limits were formerly distinguished by hillocks raised on purpose, which were called botentines, whence we have the word buttings.

ABSCISSE or ABSCISSA, in Conics, any part of the diameter or axis of a curve, contained between its vertex, or some other fixed point, and the intersection of an ordinate. Such is the line AO, contained between the vertex A of the curve BAC.



The word is derived from *abscindere*, to cut off. In the parabola, the abscissa is a third proportional to the parameter and the ordinate. In the ellipsis, the square of the ordinate is equal to the rectangle under the parameter and the abscissa, lessened by another rectangle under the said abscissa. In the hyperbola, the squares of the ordinates are as the rectangles of the abscissa, by another line compounded of the abscissa, and the transverse axis. In these two propositions, relating to the ellipsis and the hyperbola, the origin of the abscissas, on the point A, from whence they begin to be reckoned, is supposed to be the vertex of the curve, or, which amounts to the same, the point where the axis meets it; for if the origin of the abscissas be taken from the center, as is frequently done, then the two foregoing theorems no longer hold good.

ACANTHUS,

ACANTHUS, in Botany, a plant producing an irregular, monopetalous flower, terminated in a ring at the bottom. It is called in English *Bear's Breech*; the leaves of which make an ornament in the Corinthian and Composite orders. There are two species of plants of the same name; one of which is wild, and the other cultivated in gardens. The first is called in Greek *Acantha*, which signifies a thorn, on account of its having prickly leaves; and in that which the major part of the Gothic sculptors have imitated in their ornaments. The second is called in Latin *Branca ursina*, because they pretend it resembles a bear's foot. The ancient and modern sculptors have preferred the latter, and make use of it particularly in their capitals. Vitruvius says, that this plant gave occasion to Callimachus, the Grecian sculptor, to compose the Corinthian capital. It happened as follows. An old woman of Athens, happening to place a basket, covered with a little tile, over the root of an *Acanthus*, which grew on a young lady's grave at Corinth; the plant shooting up the following spring, entirely encompassed the basket, till, meeting with the tile, it curled back in a kind of scrolls. Passing by, he observed it, and immediately executed a capital on this plan, representing the tile by the abacus, and the leaves of the *Acanthus* by the volutes or scrolls; and the basket (which the French call *Tambour*) by the vase or body of the capital. Garden *Acanthus* is more indented than the wild, and more resembles parsley or smallage, as it is found represented in the Composite capitals of Titus, and Septimius Severus, at Rome. The place of the *Acanthus* leaves is on the ball of the capital, which they cover; and they are the distinction of the two rich orders from the three others; and their disposition, in a separate manner on these two, distinguishes them from one another. The Greek sculptors have taken some liberties in their representations of the leaves of this plant. Sometimes the indentings are too deep, and often too numerous for nature. They also introduce olive leaves and laurel leaves in the division; but they crave them with so much freedom, and with so little regard to truth, that, like herald-paintings, if we were not told what they represent, we should find it difficult to guess.

ACCELERATED MOTION, in Mechanics, is that whose velocity is constantly increased; and if the accessions of velocity be equal in equal times, the motion is said to be uniformly accelerated. This comes chiefly under consideration, in the descent of heavy bodies, by the force of gravity. Notwithstanding various opinions on this subject, the cause of *acceleration* is nothing mysterious; the principle of gravitation, which determines the body to descend, determining it to be *accelerated* by a necessary consequence. A body having once began to descend through the impulse of gravity, that state is now, by Sir Isaac Newton's first law, become as it were natural to it, insomuch that, were it left to itself, it would for ever continue to descend, though the first cause of its descent should cease.

But,

But, besides this determination to descend, impressed upon it by the first cause, which would be sufficient to continue the degree of motion already began to infinity, new impulses are continually superadded by the same cause, which continue to act upon the body already in motion, in the same manner as if it had remained at rest: there being then two causes of motion, acting both in the same direction, it necessarily follows, that the motion which they unitedly produce, must be more considerable than what either could produce separately; and, as long as the velocity is thus increased, the same cause still subsisting to increase it yet more, the descent must of necessity be continually accelerated. Supposing that gravity, from whatever principle, acts uniformly upon all bodies, at the same distance from the center of the earth, dividing the time which the heavy body takes up in falling to the earth into infinitely small equal parts, this gravity will impell the body towards the center of the earth, in the first infinitely short instant of the descent. If, after this, we suppose the action of gravity to cease, the body will continue perpetually to advance uniformly towards the earth's center, with an infinitely small velocity, equal to that which resulted from the first impulse. But then, if we suppose that the action of gravity continues in the second instant, the body will receive a new impulse towards the earth, equal to that which it received in the first instant, consequently its velocity will be doubled; in the third instant it will be tripled; in the fourth quadrupled; and so on. For the impulse made in any preceding instant, is no ways altered by that which is made in the following one; but they are accumulated on each other: wherefore, the instants of time being supposed infinitely small, and all equal, the velocity acquired by the falling body will be, in every instant, as the times from the beginning of the descent, and consequently the velocity will be proportional to the time in which it is acquired. The motion of an ascending body, or of one that is impelled upwards, is diminished or retarded by the same principle of gravity, acting in a contrary direction, after the same manner that a falling body is accelerated. A body projected upwards, ascends until it has lost all its motion, which it does in the same interval of time that the same body would have taken up in acquiring by falling, a velocity equal to that with which the falling body began to be projected upwards, and consequently the heights to which bodies projected upwards, with different velocities, arrive, are to each other as the square of those velocities.

ACCIDENTAL POINT, in Perspective, the point in the horizontal line, where the projections of two lines, parallel to each other, meet the respective plane.

ACCLIVITY, the slope or ascent of a line or plane, considered in its ascending direction; as the ascent of an hill is the acclivity; and, on the contrary, the descent is the declivity. The word is compounded of *ad*, and *clivus*, a slope. Some writers have used the term *Acclivity* as synonymous

mous with talus ; but the latter properly signifies the slope in general, whether it be considered as ascending or descending.

ACROTERIA, improperly called ACROTTERS, in Architecture, small pedestals, upon which globes, vases, or statues, are placed at the end or center of pediments, or frontispieces. According to Vitruvius, the height of the Acroteria, at the extremities, should be only one-half of that of the tympanum ; whereas that in the center ought to be one eighth more. Acroteria also signify the figures placed as ornaments or crownings on the tops of churches ; and sometimes those sharp pinnacles, standing in rows about flat buildings, with rails and balusters, are called Acroteria. The word is Greek, and signifies the summit or highest point of any thing.

AERIAL PERSPECTIVE, that which is represented both weak and diminished, in proportion to the distance from the eye. It is founded on this, that the longer a column of air an object is seen through, the weaker do the visual rays emitted from it affect the eye. The object of Aerial Perspective is principally colours of objects, whose force and lustre it takes off more or less, to make them appear as if more or less remote.

AJUTAGE, or ADJUTAGE, in Hydraulics, a small pipe fitted to the aperture of a Jet d'eau, or fountain. Experiments have shewn, that a reservoir of 12 feet height above the orifice of an Ajutage of three lines diameter, delivers 14 Paris pints of water in a minute. This may serve as a fundamental rule for fountains, assisted by the following principles. When the height of the reservoirs is the same, and the orifices of the Ajutages different, the expence of water is proportional to the squares of the diameters of the Ajutages, when the expence of water, through different Ajutages, is thus computed. If 9, the square of 3, gives, by experiment, 14 pints, what will an Ajutage of 5 or 6 lines give. The answer is, 39 pints for 5, and 55 pints for 6. If the expence of two reservoirs of unequal heights, and different Ajutages, be required, proceed by the following rule. The expence of water of two reservoirs, whose heights are different, and also their Ajutages, are in the compound ratio of the squares of the diameters of the Ajutages, and of the subduplicate ratio of the heights. Water spouting upwards, through an Ajutage, would ascend to the same height as that of its upper surface in the reservoir, were it not for the resistance of the air, the friction at the sides of the Ajutage, and some little impediments at the motion of the water in itself ; on account of which, the height of the rise is always defective. It is found, by experience, that if the direction of the Ajutage be a small matter inclined, the water will rise higher than if it be truly upright ; and that a polished round hole, in a thin plate of metal, at the top of the pipe, by way of Ajutage, will suffer the water to spout higher than when it is cylindrical or conical. Experience also shews, that the bigness of the pipe of the Ajutage should be enlarged at and near the surface of the water in the reservoir,

voir, and that such pipe should be much larger than the Ajutage : also that there is a certain length among the several diameters of the Ajutages, which will spout the greatest height possible, and which must not exceed an inch and a quarter. Likewise, the height of the spout must have its limits, 100 feet being almost as much as it will bear. Let it be observed, 1. that the squares of the quantities flowing out from the same Ajutage in equal times, are in the ratio of the heights of the liquid above the aperture. 2. The times in which cylindrical vessels of the same diameter and height are emptied, the liquid flowing from unequal apertures, are in the inverse ratio of the areas of those apertures. 3. Cylindrical vessels of unequal bases, but of equal heights, are emptied through equal apertures in times that are in the ratio of their bases. 4. The times in which any cylindrical vessels are evacuated, are in a ratio compounded of the bases, the inverse ratio of the apertures, and direct ratio of the square roots of the heights. If the side of a cylindrical vessel, beginning from the base be divided into lengths, which are as 1, 4, 9, 16, &c. viz. the squares of the natural numbers, 1, 2, 3, 4, &c. the surface of the water (running out through an hole or aperture at the bottom) will descend from each of those divisions to the next, in the same time. In the above investigations, we always suppose the velocity of the effluent water to remain constant during the evacuation; and therefore, when we speak of the time of emptying a cylindrical vessel, we only mean that time in which (the vessel being kept constantly full) a quantity of the liquid, equal in magnitude to the capacity of the vessel, will flow through the Ajutage, or aperture, in the side of the perpendicular cylinder.

ALABASTER, *A'abastrites*, in Natural History, the name of a genus of fossils, nearly allied to marble. It is an elegant stone of great brightness, and will receive a fine polish, but is brittle. Naturalists enumerate several species of alabaster; as, the snow-white shining alabaster. Boet informs us, that this stone is extremely white, and found in Taurus in pieces only large enough to make dishes and the like; but it was formerly brought from Arabia. It is not very compact, but heavy, and consists of a multitude of broad flat particles, which are very bright, and perfectly white. It cuts very freely, and is capable of a fine polish. There are very large strata of it in Arabia, Egypt, and many parts of Italy. Whitish yellow alabaster is of a soft consistence, and called by Boet, the Phengites of Pliny, who affirms it was found in Cappadocia. It is of a loose open texture, considerably heavy, and nearly of the colour of honey; but the colour is more deep in some places than in others. It consists of irregular pieces lying in tables one over another, though with regularity, and altogether compose a remarkable bright and very brittle mass. Besides the places above-mentioned, it has been found in Germany, France, and Derbyshire. Yellow and reddish variegated Alabaster is the common
Alabaster

Alabaster of the ancients. It is so soft, that it may be cut with a knife; and has the same name in all languages. It is remarkably bright, glittering, and almost transparent; and its texture very loose and open, though it is moderately heavy. The ground is of a clear pale yellow, between that of honey and amber, and has the same with crooked undulated veins, some of which are broad, and others narrow; some of a pale red, others whitish, and others again of a very agreeable pale brown. It will bear a very fine polish, and consists of large angular sparry concretions. It was formerly found only in Egypt, but is now met with in many parts of England.

Its use is chiefly in making monuments in churches, &c. where there are many figures in relief, or bas relief, &c. carved. It is also used for carving coats of arms cut in relief, to be set in brick or stone in the fronts of houses. Alabaster cuts very smooth and easy, and is much used by sculptors in making small statues, vases, columns, &c. It is also used like plaister of Paris, being first burnt and calcined, then mixed with water to a thin consistence; which being afterwards cast into a mould, it very readily coagulates into a solid body.

ALCOVE, from *Alcoa*, Spanish, a recess or part of a chamber, separated by an estrade, or partition of columns, and other corresponding ornaments; in which either a bed of state is placed, or seats to entertain company. Where a part of a room is separated by a screen of columns, and has seats in it (whether with or without a bed, it is called an Alcove; and the seats in gardens, when they in any manner approach to the form of such a part of the room, are in the same manner called *Alcoves*. These Alcoves are frequent in noble houses in Spain.

ALDER-TREE, *Alnus*, in Botany. There are eight species of this plant enumerated by botanical authors; but the common Alder is generally meant by that name. There is a peculiar beneficial property belonging to this tree; for no beast will crop it; which saves the great charge of fencing it after planting. Formerly large alders were used for building boats, and now they are so much esteemed for such parts of works as lie continually under water; where it will become as hard as stone; but, if it be sometimes suffered to lie exposed to the weather, and at other times under the ground in watery places, it will decay in a very short time. Vitruvius informs us, that the morasses about Ravenna, in Italy, were piled with Alder timber, in order to build upon; for which use he highly commends it. The Rialto, that celebrated bridge at Venice, over the grand canal, which bears a vast weight, is built upon piles of this wood. Trunks of trees, or poles of this wood, are exceedingly useful in making pumps, water pipes, &c. In the country they are used for water-pipes for the conveyance of water through bogs and dams; and also for water-pipes for conveying water to supply houses from any spring. Large poles of trees of this wood are also used for ground-cuts, for conveying water out

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of stews. These poles are about eight or ten inches diameter, and the cavity in them about four, or four and a half. But for water-pipes, the poles need not be above four or five inches diameter, and the cavity about an inch and a quarter, or an inch and a half diameter. As to the method of boring Alder-pipes: these poles being laid on horses or treffels of a proper height, to rest the augur upon while they are boring, they set up a lath, to turn the least end of the poles, to fit them to the cavities of the great end of the others. The lath being set up, and the poles cut to the lengths they will conveniently hold, viz. eight, ten, or twelve feet, they turn the small ends of the poles about five or six inches in length, to the size they intend to bore the larger ends, about the same depths, viz. five or six inches. This is intended to make a joint to shut each pair of poles together; the concave part being the female part, and the other part the male of the joint. In turning of the male part, they turn a channel in it, or a small groove at a certain distance from the end; and, in the female part, they bore a small hole to fit over this channel. This being done, they bore the holes through; and, to prevent them from boring out at the sides, they stick great nails at each end, to be a guide to them in boring strait through; though they usually bore them at both ends, by which means, if a pole be crooked one way, they can bore it through and not spoil it. The holes being bored, they form them into pipes in the ground; in order to which they dig a trench, and prepare it with clay, to ram them in the female part, which is first bound with an iron ring round it, to prevent its splitting; afterwards they drive in the male part, till the groove in it is just under the hole; and pour melted pitch hot into the hole, in the female part. By this means the junctures are rendered very compact and close; and in this manner they proceed till they have laid all their poles or pipes in their order.

ALLEY, in Perspective, is that which is larger at the entrance than at the issue, to give it a greater appearance of length.

ALTIMETRY, the art of measuring altitudes or heights, whether accessible or inaccessible.

AMPHITHEATRE, a spacious edifice of a circular or oval form, with rising seats, on which the people sat to behold the combats, or gladiators, wild beasts, and other sports. Amphitheatres were originally built of wood; and Statilius Taurus, in the reign of Augustus, was the first who erected one of stone. The lowest part was called *Arena*, from its being generally strewed with sand, for the conveniency of the combatants; and round the area were vaults, in which the wild beasts appointed for the shews were contained. Above these cells was erected a large circular peristyle, for accommodating the emperors, senators, and other persons of distinction. Over the peristyle were the rows of benches, which were entered

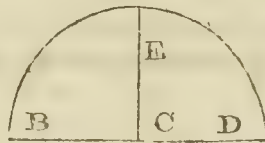
entered by avenues terminated by gates. The theatres of the antients were built in the form of a semicircle, only exceeding a just semicircle by one-fourth part of the diameter; and the amphitheatre is nothing more than a double-theatre, or two theatres joined together; so that the longest diameter of the amphitheatre, was, to the shortest, as one and an half to one. We have the remains of three very considerable ones standing at this time; the *Coliseum*, which was an amphitheatre of Vespasian; another at Verona in Italy; and the third in Languedoc, near Nismes. There are also remains of some others.

ANCHOR, in Architecture, a sort of carving resembling an Anchor. They are generally placed as part of the enrichments of the boultins of capitals of the Tuscan, Doric, and Ionic orders; and also of the boultins of bed-mouldings of the Doric, Ionic, and Corinthian cornices; these Anchors and eggs being carved alternately throughout the whole buildings.

ANCONES, the corners or coins of walls, cross-beams, or rafters, Vitruvius calls the consoles (a kind of brackets or shouldering pieces) by this name.

ANGLE, *Angulus*, the mutual inclination of two lines, which meet and form an Angle in one point. But if two lines meet in such a manner, as to have no inclination to each other, they will generate a right-line, and a right-line equal to both their lengths, without forming any Angle. And, on the contrary, if any right-line meet another right-line in any different position, they will constitute an Angle at their point of meeting. An Angle is signified by the three letters, of which the middlemost always denotes the Angle; so in the case of the two right Angles, in the figure RIGHT ANGLE, which follows, the one is denoted by the letters ECD, and the other by the letters ECB.

A RIGHT ANGLE is that whose legs are perpendicular to each other, and is constituted by the meeting of two right lines, with an equal inclination; that is, if a line, as EC, meet another line, as DB.



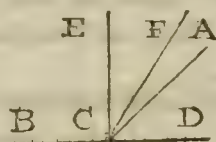
and inclines no more towards D, than it does towards B, but stands directly square between both, then the angle is called a *Right Angle*, and the line EC is therefore called a perpendicular line to the line DB. The line EC standing upon the line BD, at C, is perpendicular thereto; because, if you describe a semicircle on C, with any radius, as BED, the

D

arch

arch BE will be equal to the arch DE; and since both arches are equal to each other, and to a semicircle also, being taken together, it therefore follows that both the angles on either side are equal, and are therefore called Rect or Right Angles. As the semicircle BED contains one hundred and eighty degrees, being just the half of three hundred and sixty degrees, contained in every whole circle, and is equally divided in C, by the perpendicular line EC; it therefore follows, that the angles BEC, and DEC, are equal to each other, and must each consist of ninety degrees; therefore a right-angled triangle is that whose arch contains exactly ninety degrees.

ACUTE ANGLE, is that which is less than a right angle, or an angle whose inclination is nearer than a right angle; so that when any two lines incline nearer to each other than DC



does to EC, as the lines FC, and DC, or AC, and DC, then by their meeting they form sharper angles than the right angle ECD, and are therefore all called Acute Angles.

OBTUSE ANGLE, is that which is greater than a right angle.

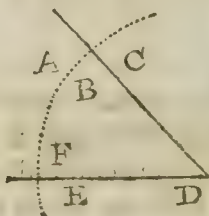
ADJACENT ANGLES, such as have the same vertex, and one of the legs continued beyond the angular point.

VERTICAL ANGLES are formed by two right lines intersecting each other.

ANGLE at the center of a circle, is an angle in a circle, whose vertex is in the center of that circle.

The quantity and measure of an ANGLE, is the arch of a circle described on the angular point, intercepted between the two sides of that angle.

To make an Angle of any given magnitude, suppose fifty degrees,



First,

First, draw a line at pleasure, as FD; then take sixty degrees from your line of chords, and on one end thereof, as at D, describe an arch, as EC. Secondly, take from your line of chords fifty degrees, the quantity of the given angle, and set it on the arch from EC to EB; then drawing the right line DA from A, through B, it will complete the angle required.

The Complements of ANGLES, are the same as the complements of arches, because their quantities are measured by arches of circles.

ANNULET, in Architecture, a small square member in the Doric capital, under the quarter round. It is also used to imply a narrow flat moulding, common to various parts of the columns; particularly their bases, capitals, &c. Vitruvius calls it a fillet; Palladio a listel or cincture; and Scammozzi a supercilium, a list, tinea, eye-brow, square, and rabbit.

ANTA, in Architecture, is used by M. Le Clerc for a kind of shaft of a pilaster, without base or capital, and even without any moulding.

ANTÆ, a name by which Vitruvius has called pilasters when they are adjoining to the wall: when they are free or insulate, he calls them parastatæ. In the first case they have usually no diminution.

ANTE-CHAMBER, or ANTI-CHAMBER, in Architecture, the chamber that leads into the chief apartment; where the servants wait, and also strangers, till the person who is attended at leisure to speak with them. A well proportioned ante-chamber ought to be, in length, the diagonal line of the square of the breadth; and not to exceed the breadth and half at most. As to their height, they are made either arched or flat; if they are flat, their height ought to be from the floor to the joists, two-third parts of their breadth. But if you choose to have it higher, divide the breadth into seven parts, and take five of them for the height; or divide the breadth into four parts, and take three of them for the height. In spacious buildings, the ante-chamber, hall, and other rooms of the first story, may be arched, which will not only render them handsome, but less subject to fire: and in such buildings, the height may be five-sixths of the breadth, from the floor to the bottom of the key of the arch. But, if this height should be thought too low, you may make the height seven-heights of the breadth: or it may be eleven-twelfths, which will render it still more stately. Ante-chambers ought to be so situated, that they may be on each side of the entry, and of the hall. And this also ought to be observed, that those on the right hand may answer, and be equal (or nearly equal) to those on the left; in order that the buildings may, on all sides, bear equally on the roof.

ANTIC, in Sculpture and Painting, is used to signify a confused assemblage of figures of different natures and sexes, &c. as of men, beasts, birds, fish, flowers, &c. And also such kind of fancies as are not to be found in nature. It would be too tedious a task to enumerate all the antic forms

forms and fancies by which the Heathens represented their several deities, and their poets, painters, and sculptors described them. They also had strange and monstrous figures of human creatures, which were represented in sculpture, painting, &c. as of Centaurs, half men and half horses; Segitaurs, half men and half bulls; Syrens, or mermaids, half women and half fish; Harpies, half women and half birds; Griffins, half beasts and half birds; Dragons, part serpents and part birds; the spread-eagle with two heads, and many others equally unnatural. They also represented various sorts of flowers and fruits, growing on the same plant, tree, &c. and many fictions of that kind. These representations are called by the Italians *Grotesca*, and by the French *Grotesque*, which signify comical, whimsical, laughable, pleasant, ridiculous; and the word *Grotesques* signifies ridiculous whims or fancies.

ANTIPAGMENTS, ornaments or enrichments in carved work, set on the architrave (jambs, posts, or puncheons of doors) whether of wood or stone: after the Latin antique word *Antipagmenta*.

ANTIQUE, pronounced *Anteek*, from *Antique* French. It is a term most in use among architects, sculptors, and painters; they make use of it to express pieces of architecture, sculpture, or paintings, executed in the ages when those arts were carried to the highest perfection, by men of the finest genius in Greece and Rome; that is, from the age of Alexander the Great, to the reign of the emperor Phocas, about the year of our Lord 600. Antique, in this sense, is opposed to modern; thus we say an Antique edifice, busto, basso relievo, or manner; an antique model; of a statue, that it is in an antique taste. We have several antique pieces of sculpture left, as the Laocoon and Venus, in the possession of the family of Medicis; the Apollo and Hercules of the house of Farnese, &c. Antique paintings are more scarce; we have only the wedding of Aldobrandinus, some little figures of the pyramid of Cestius, a Venus, which is the palladium of Rome, and some small pieces in fresco, preserved out of the ruins of the baths of Titus and Heraclius. Some sculptures have counterfeited antiques so nicely as to impose upon the judgment of the public; witness the famous story of Michael Angelo's Cupid.

ANTIQUE MANNER, a phrase used to express any modern building, or part of a building, which is executed according to the strict rules and good taste of the ancients. The word Antique, in its extensive sense, stands as a distinction from modern; and thus the antique taste is understood as distinguished from the modern, which is fuller of ornament and less correct.

ANTIQUE MODERN, a term used to signify those buildings, which have been executed since the time comprehended under the word Antique, and yet too long to be properly called Modern. Our old Gothic churches, and other structures of that kind and time, are called *Antique Modern* edifices,

edifices, to distinguish them from those of the Greeks and Romans.

APERTURE, or **APERITION**, from *Aperio*, to open. In architecture, some opening, as a door, window, chimney, stair-case, and all outlets and inlets for light, smoke, &c. Apertures ought to be as few in number, and moderate in dimensions as possible it being a maxim, in architecture, that every Aperture or opening has a tendency to weaken the building; nor must they be made too near the angles of the walls; for it would indeed be a great solecism, to weaken that part which ought to strengthen all the rest.

APOPHYGE, in architecture, the convex part, or ring of a column, lying either above or below the flat member. It was originally nothing more than the ferril or ring, fixed on the extremity of a wooden pillar to prevent its splitting, and was afterwards imitated in stone-work.

APPEARANCE, in perspective, the projection of a figure or body on the perspective plane. In Optics, direct Appearance is the sight of any object by direct rays, without refraction or reflection.

AQUEDUCT, an artificial canal, built for the conveyance of water from one place to another; either running under ground, or raised above it; and serving to carry the water to places according to their level, notwithstanding the unevenness of the ground between. This word is derived from the Latin *aqua ductus*, a conduit of water. Many of the Aqueducts of the antients were great and astonishing works; some of which are preserved in large remains to this day. We are informed that the Aqueduct in Rome, brought daily into that city more than five hundred thousand hogsheads of water. The lesser Aqueducts were of wood, and the larger of stone; and those which were raised above the ground, were supported by arches in the manner of bridges, from one rising ground to another, often at several miles distance. The Aqueduct built near Maintenon, for carrying the river Bure to Versailles, is the greatest in the world. It is seven thousand fathoms in length, and its elevation 2560 fathoms, containing 242 arcades.

ARABASQUE, or **ARABASK**, something done after the manner of the Arabians. *Arabesque*, *Grotesque*, and *Thoresque*, are terms applied to such paintings, ornaments of freezes, &c. on which there are no human or animal figures, but which consist wholly of imaginary foliages, plants, stalks, &c. These terms are derived from the Arabs, Moors, and other Mahometans, who make use of these kinds of ornaments, because their religion forbids them to make any images or figures of men, or other animals.

ARÆOSTYLE, a term used by Vitruvius, to signify the greatest interval or distance which can be made between columns; which consists of eight modules, or four diameters.

ARC-BOUTANT, (from *arc* and *bouter*, fr. to *abut*) a flat arch, or
E
part

part of an arch abutting against the reins of a vault, to support and prevent its giving way.

ARCH, (of *Arcus*, Lat.) in architecture, a concave building, erected on a mould bent in the form of a curve, for supporting some structure. Arches are either circular, elliptical, or *straight*, as they are improperly called by workmen. The terms *arch*, and *vault*, properly differ only in this, that the arch expresses a narrower, and the vault a broader piece of the same kind.

What are called *straight* arches, are those frequently used over doors and windows, the upper and under edges of which are straight and parallel, and the ends and joints all pointing towards a centre.

The space between the piers of a bridge is called an Arch, because usually arched over.

Triumphal arches are magnificent entries into cities, &c. of a semicircular form, adorned with sculpture, inscriptions, &c. erected in honour of those who have deserved a triumph. The arches of Titus and Constantine make, at this time, a great figure among the ruins of old Rome.

Of a circular arch upon a circular plan. From an ingenious work just published, by Mr. SKAIFE, "There is not the difficulty in an arch of this construction in brick-work, that is usually considered; the principal thing to be thought of is the scheme for striking the front of the bricks, which, once properly understood, will render the practice exceedingly familiar. There is another consideration to be observed, which is the soffit of the bricks to these arches, and must bear the exact gauge behind as before, in order to secure the strength and key, that the arch may have no inclination to a center, otherwise than what tends to its gravity.

The best practical method I can allude to, is, after you have divided the arch, and settled your bond in front, make two moulds to sweep off the wall; after fix two uprights of wood a little above the top of the arch; at the top fix one, and let the other be moved down to the top of the courses as they gradually rise; then with a rod, with a prick in the end, clapped close to those two ribs, strike the top-sides of every brick; the under-side may be marked by the preceding brick; and in this manner proceed all the way, till you get to the top, which will give the exact curve required to the wall, and perpendicular to the ground plan.

A CRIMMA elliptical arch, upon the above plan, may be executed in the same manner respecting the front; and soffit likewise. Arches that splay in the jambs, and both rise to one height, must be reduced to practice, in the following manner; first, divide the arches on both sides into an exact number of bricks; and, having drawn the width of the wall, and laid down the arches on both sides, let fall perpendiculars from the different ends of the bricks on both sides, and draw parallel lines into each by the splay of the wall, which will give the exact size of the bricks in the soffit, and likewise the splay of the face of the bricks on both sides. As I

am

am treating of brick-work, I shall say something of the prices, before I depart from the subject.

Of the quantity of materials to a rod of brick-work.

The requisite quantity of materials to a rod of brick-work, which is the standard for valuing, as well as taking dimensions; the master's prices, and those stipulated by surveyors, come next within our notice, as well as the just calculation for London, and every capital town in the kingdom, divested of all errors of surveyors, and extravagant exactions of some masters. And, first, it will not be amiss to mention, that a rod is a measure of sixteen feet and a half, which, multiplied into itself, contains 272 feet and one quarter to one brick and half thick, which is the standard on which the price is fixed; let the wall consist of what number of bricks in thickness soever, they are always reduced to a system by the following rule: multiply the superficial content of the wall by the number of half bricks it contains in thickness; and divide that product by three; the quotient will be the content in feet, to the standard. Lastly, divide that quotient by 272, the number of superficial feet in a rod, and the last quotient will be the content in rods, and the remains feet. See the example.

Suppose the dimensions of a wall was 64 feet 6 inches by 24 feet 6 inches, and three bricks thick, first multiply 64 feet 6 inches by 24 feet 6 inches, the product is 1580.3, which I multiply by 6, the number of half bricks the wall contains; the product is 9481 feet 6 inches, which I divide by 3, the number of half bricks in the standard; the quotient is 3160 and 2 parts; which I divide by 272, the number of superficial feet in a rod, the last quotient is 11 rods and 71 feet.

$ \begin{array}{r} 64 \ 6 \\ 24 \ 6 \\ \hline 256 \\ 128 \\ 32 \ 3 \\ 12 \\ \hline 1580. \ 3 \\ \hline 3(9481 \ 6)3160 \\ 9 \\ \hline 4 \\ 3 \\ \hline 18 \\ 18 \\ \hline 1 \\ \hline \end{array} $	$ \begin{array}{r} 272)3160 \ 2(11 \\ \underline{272} \\ 440 \\ \underline{272} \\ 168 \\ \hline \end{array} $
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When-

Whenever it happens that there is a large remains of feet, you must divide them by 68, the number of feet in a quarter of a rod, which will bring you nearer, if you have but one number: if many, add them all together; and this rule will serve for every subject. According to a wall of the above dimensions, the quantity of reduced brick-work is 11 square 1 quarter, and 3 feet, as in the margin.

68)	168(2
	136
	<hr style="width: 50px; margin: 0;"/>
	32
	Sq. Q. Ft.
	11 2 32

Note, Though a rod contains 272 feet and a quarter, the quarter is always rejected: then divide by 272, which is near enough for brick-work, as a quarter of a foot, stuff, and labour, cannot be worth more than two-pence, which is too trivial to mention, in an eight pound matter. The same of the parts of a foot to be divided, as in the above example. Having given an example of measuring brick-work, in order to come at the value, we must consider the quantity as well as the quality of the materials along with the exact time it takes to execute it. And, first, of materials. My reader must observe, that to every rod of brick-work is required 4400, and of some (as bricks vary much in size) 4500 of bricks, one load of lime, or 32 bushels of lime, and two loads of sand, which is the nearest general calculation that can be made. I have, notwithstanding, seen bricks of such a size, that 4000 of them would have walled a rod: but those are rarely to be met with; therefore we must abide by the above number. The same of lime and sand, which may vary a little according as they are in goodness. There are two sorts of lime; the one made of chalk, the other of stone: the latter in point of strength and quality deserves much the preference. There are also different sorts of sand, and equally good; but that which ought to be preferred for building is river-sand, and is much the best in a strong current; of this you may put three of sand to one of lime that is made of stone; if of chalk, only two of sand, and one of lime. There is a kind of white pit-sand in many countries; but it is not so good as red. My reader must observe, that with regard to materials no universal standard can be found, because bricks and lime vary in every county; therefore I shall fix a price for a rod of brick-work in London; and after make a table to serve the country, according as materials vary in value. But first let us enquire into the labour which a rod of brick-work requires. My reader must allow, that in order to settle a general plan for labour, we must either account the mean proportion of time, or stipulate the best wages to the least that reason can allow; which, to a good journeyman of 3 s. per day, will take four days, and the like quantity or length of time to a labourer, besides the making the mortar, &c. Next, my reader must observe, that bricks in London are per thousand from 1 l. to 1 l. 10 s. therefore we will not hesitate in this, but take a mean of 1 l. 5 s. for our standard-

standard-price, and lime we will reckon at 5 d. per bushel, and sand 4 s. per load; which are about the neat prices. The reason I chuse to mention lime by the bushel, is to give a clearer light into this matter, than I should by mentioning it, either by the bag or hundred, because every county hath a just knowledge of the bushel, and few of bags and hundreds. But to the point.

	l.	s.	d.
4,500 of bricks, at 1l. 5s. <i>per</i> 1000	is	5	12 6
32 bushels of lime, at 5d. <i>per</i> bushel	is	0	13 4
Labour of trowel-hand, at 3s <i>per</i> day, 4 days,	is	0	12 0
Ditto a labourer at 2s. ditto	is	0	8 0
Making the mortar to ditto		0	3 0
		<hr/>	<hr/>
		7	8 10
		<hr/>	<hr/>

By the above stipulation we find, that 7l. 8s. 10d. is the neat price which a master pays out of his own pocket, besides the loss of his tools, as shovels, screens, the wear of cords, poles, puttocks, &c. which are always upon the waste, and boards, his own time, and the laying out of his money; therefore, for materials of the above quality, a master in justice should have *per* rod 8l. 10s. But in order to come at a real standard of prices for brick-work in any county, I beg my reader to have recourse to the following table, calculated as universal, allowing the master for lime, sand, and making the mortar, 1l. 3s. and for labour 1l. 5s.

An universal TABLE of BRICK-WORK, allowing 1l. 3s. Mortar, and 1l. 5s. Labour.

Bricks per 1000.			Mortar and Labour.			The Price.		
At	s.		l.	s.		l.	s.	d.
10	—	—	2	8	—	is	4	13 0
11	—	—	ditto	—	—		4	17 6
12	—	—	ditto	—	—		5	2 0
13	—	—	ditto	—	—		5	6 6
14	—	—	ditto	—	—		5	11 0
15	—	—	ditto	—	—		5	15 6
16	—	—	ditto	—	—		6	0 0
17	—	—	ditto	—	—		6	4 6
18	—	—	ditto	—	—		6	9 0
19	—	—	ditto	—	—		6	13 6
20	—	—	ditto	—	—		6	18 0
21	—	—	ditto	—	—		7	2 6
22	—	—	ditto	—	—		7	7 0
			F			Bricks		

Bricks per 1000.		Mortar and Labour.			The Price.		
s.		l.	s.		l.	s.	d.
At	23	—	ditto	—	is	7	11 6
	24	—	ditto	—		7	16 0
	25	—	ditto	—		8	0 6
	26	—	ditto	—		8	5 0
	27	—	ditto	—		8	9 6
	28	—	ditto	—		8	14 0
	29	—	ditto	—		8	18 6
	30	—	ditto	—		9	3 0

The above table I have calculated to serve the country, and ought to be the standard in town, when there are no extraordinary exceptions, as fronts with particular breaks, which are attended with much trouble, &c.

If a master-bricklayer stipulates all his work at one price, as fronts, foundations, and party-walls, one thing will make amends for the loss of another. The price should be what I have mentioned prior to the table; though masters would grumble at this price; because being only allowed 11. per rod profit, which I think very sufficient; for by this rule, if a master can but employ twelve trowel-men the year round his business will be a good 500 l. per annum, allowing one hundred per ditto for bad debts, and keeping up his scaffolding. Whether this is sufficient or not I leave to the judgment of the world.—But I say, if from such prices (which are considerably less than many masters have) these genteel profits arise, what shall we say to 10 l. and 12 l. per rod, which I have known many bricklayers charge for common brick-work? But the last is exorbitant, and ought to be utterly abolished. There are indeed particular jobs, as warehouses of a particular height that stand close to the Thames, where one labourer is not sufficient to half serve one bricklayer, and where double the trouble is required to erect the scaffold, &c. In these cases 12 l. per rod may not be amiss. I would not willingly infer, or be supposed to insinuate, that the above prices should be lowered; but will take the liberty to say, if a master is allowed 9 l. or 10 l. per rod, he ought to augment his journeymen's wages; a thing which ought to be maturely considered in every branch of building.

I make no doubt but some people will wonder how I can so easily reconcile this giving as much for labour to a country master as a London one, in business like a bricklayer, and so easily attained. To the person that makes this objection, I give the following answer; that there is a slight in brick-work as well as in every other practice, and that bricklayers in London are obliged to do one-third more work than in the country is ever desired: besides, in point of labourers with regard to their prices, which in London are considerably more than the country, and with justice too; for could you have a country labourer in London, you would

would find he would not be able to half-serve a bricklayer, without a year's experience. A rod of brick-work in the country is, by men that have not had London practice, five and a half day's work, and in some places six; nay, I have even known a brick-layer in the country, and who was esteemed a good workman, to be eight days over-walling a rod, and all this time a labourer to attend him; which, if we rightly consider, will produce the country masters less profits by much, and not to have work for half the number of men.

To a gentleman that finds his own materials, scaffolding, &c. a master shall have from 1l. 8s. to 1l. 16s. per rod labour, according to the goodness of the work. The standard price by many surveyors is 1l. 10s. The masters prices, where no surveyor is concerned, are from 1l. 16s. to 1l. 18s. which will allow for men to have 3s. 6d. per day, which ought to be the journeyman's price, as brick-laying is but an half year's business.

It is hoped our readers will pardon this digression, as we shall now return to the subject of arches.

ARCH of a circle, is a part of the circumference of it less than half a semicircle. The base or line that joins the two extremes of the arch, is called the chord; and the perpendicular raised in the middle of that line, is the sine of the arch. Every circle is supposed to be divided into 360 degrees, and an arch is estimated according to the number of these degrees it takes up. Thus an arch is said to be 20, 30, 50, 80, 100 degrees.

Equal ARCHES, are those which contain the same number of degrees, and are cut from the same circle.

Similar ARCHES are those which contain the same number of degrees, but cut from unequal circles.

Sir Henry Wooten says, an arch is a narrow contracted vault, and a vault a dilated arch.

Arches are used in large intercolumnations of spacious edifices, in porticoes, both within and about temples; in public halls, as ceilings; the courts of palaces, cloisters, theatres, and anti-theatres.

An arch in geometry, is any part of the circumference of a circle or curved line, extending from one point to another.

An arch in masonry, contains a number of stones, hewn out and wrought, which when set in their proper places, are as one solid circular course, whose lower ends form any part of a circle or curved line, calculated to support any weight, proportionate to their strength and figure. Sir Henry Wooten, in his Theorems, observes, that "All solid materials, free from impediments, descend perpendicularly, because ponderosity is a natural inclination to the center of the earth, and nature performs her motions by the shortest lines." This evidently proves, that all arch stones must

must be drawn from their central points to form the curve; otherwise their bearings will be rendered imperfect.

Semicircular ARCHES, are those arches which are an exact semicircle; and have their center in the middle of the diameter (or chord of the arch) or the right line that may be drawn between the feet of the arch. Of this form the arches of bridges, windows of churches, and great gates, are frequently made in modern buildings.

Scheme or *Skeen* ARCHES, are those which are less than a semicircle, and consequently are flatter arches, containing some 90, some 70, and others 60 degrees.

Semicircular arches are easily distinguished from scheme arches thus; That the chord or right line, drawn between the feet of a semicircular arch, is just double to its height (being measured from the middle of the chord to the key-piece or top of the arch) whereas the chord of a scheme arch of 96 degrees, will be more than four times its height, and the chord of a scheme arch of 60 degrees, will be more than six times its height.

The famous Alberti, in his *architectura*, has the following observations. In all openings, in which we make arches, we ought to contrive never to have the arch less than a semicircle, with the addition of the seventh part of half its diameter, the most experienced workmen having found that arch to be much best adapted for enduring, in a manner, to perpetuity; all other arches being thought less strong for supporting the weight, and more liable to ruin.

It is also thought, that the half circle is the only arch that has no occasion, either for chain, or any other fortification; whereas all others are found, by experience, either to burst out, or fall to ruin by their own weight, if they are not chained, or have not some weight placed against them for a counterpoise.

I will not omit, continues he, what I have observed among the antients, a very excellent and commendable contrivance; their best architects placed these apertures, and the arches of the roofs of temples, in such a manner, that if you even took away every column from under them, they would still remain firm and not fall down: the arches, on which the roof was placed, being drawn quite down to the foundation, with astonishing art, known only to a few; so that the work upheld itself by being only set upon arches; for as those arches had the solid earth for their chain, it is not to be wondered at that they stood firm without any support.

The doctrine and use of arches is well delivered by Sir Henry Wooten in the following Theorems.

Theorem I. All matter, unless impeded, tends to the centre of the earth in a perpendicular line, or descends perpendicularly downwards.

Theorem II. All solid materials, as bricks, stones, &c. moulded in their common rectangular form, if laid in numbers, one by the side of another,

another, in a level row, and their extreme ends sustained between two supporters, all the pieces between will necessarily sink, even by their own natural gravity; and must much more, if they are pressed down, or suffer any pressure by a super-incumbent weight; because their sides being parallel, they have room to descend perpendicularly without impediment, according to the former theorem; therefore to make them stand, either their figure or their position must be altered.

Theorem III. Stones, bricks, or other materials, being figured cuneatim, *i. e.* wedge-wise, somewhat broader above than below, and laid in a level row, with their two extremes supported, as in the preceding theorem, and pointing all to the same centre; none of the pieces between can sink, till the supporters or buttments give way, because they want room in that situation, to descend perpendicularly. But this is a weak structure; because the supporters are subject to too much impulsion, especially where the line is long; for which reason, this form of straight arches is seldom used, but over doors and windows, where the line is short. Therefore, in order to fortify the work, the figure of the materials must not only be changed, but the position of them too; as will appear in the following theorem.

Theorem IV. If the materials be shaped wedge-wise, and disposed in the form of a circular Arch, and pointing to some centre: in this case, neither the pieces of the said Arch can sink downwards for want of room to descend perpendicularly, nor can the supporters or buttments of this Arch suffer so much violence, as in the preceding platform, for the roundness, or rather convexity, will always make the incumbent weight rather rest upon the supporters, than heave or shove them outwards; whence this corollary may be fairly deduced, that the safest or most secure of all the Arches above-mentioned, is the semicircular; and of all vaults; the hemispherical, although not absolutely exempted from some natural imbecility, (which is the sole prerogative of perpendicular lines and right angles) as has been observed by Bernardino Baldi, Abbot of Guastalla, in his Commentary upon Aristotle's Mechanics; where by the way, it is to be noted, that when any thing is demonstrated mathematically to be weak, it is much more so mechanically; errors always occurring more easily in the management of gross materials, than in lineal designs.

Theorem V. As semicircular Arches, or hemispherical vaults, raised on the whole diameter, are the strongest and securest by the preceding theorem, so they are also the most beautiful; which keeping precisely to the same height, are yet distended one fourteenth part longer than the said diameter: which addition of width will contribute greatly to their beauty, without diminishing any thing considerable of their strength. However it is to be observed, that according to geometrical strictness, in

order to have the strongest Arches, they must not be portions of circles, but of another curve, called, the catenaria; the nature of which is such, that a number of spheres disposed in this form, will sustain each other; and form an Arch. Dr. Gregory, Phil. Trans. No. 231, has shewn, that Arches constructed in other curves, only stand or sustain themselves by virtue of the catenaria contained in their thickness; so that if they were made infinitely slender or thin, they must of course tumble; whereas the catenaria, though infinitely slender, must stand, by reason that no one point of it tends downwards more than any other.

Of measuring Arches. Whether the arches be straight or circular, they must be measured in the middle, i. e. if a straight arch be ten inches in height, or depth, the length must be measured in the middle of the ten inches; which length will not be any longer, than if it were measured at the under side next to the head of the window, by so much as one side of the springing arch is turned back from the upright of the jaumbs, peers, or coins of the windows. And also in circular Arches, it is to be observed, that the upper part of the Arch is longer (if girt about) than the under part, because it is the segment of a greater circle, cut off by the same right line that the lesser is, and therefore must be girt in the middle.

ARCHITECT, a person skilled in architecture, who not only draws the plans of edifices, but also superintends and directs the artificers. It is his business to consider the whole manner and method of the building, and also to calculate the expence. In the management of which he ought to have regard to its situation, contrivance, strength, beauty, form, and materials. The term Architect is also used for the surveyor or superintendant of an edifice, the management being wholly committed to his circumspection. Vitruvius enumerates twelve qualifications requisite for a complete Architect, viz. that he be docile and ingenious, literate, skilled in Designing, in Geometry, Optics, Arithmetic, History, Philosophy, Music, Medicine, Law, and Astrology. The most celebrated Architects among the antients, are Vitruvius, Palladio, Scamozzi, Serlio, Vignola, Barbaro, Cataneo, Alberti, Vida, Bullant, De Lorme, and many others.

ARCHITECTONIC, something endowed with the power and skill of building, or calculated to assist the architect.

ARCHITECTURE, the art or science of erecting edifices, either for habitation or defence. It gives the rules for designing and raising all sorts of structures, according to the rules of Geometry and proportion, and includes all those arts which conduce, in any degree, to the framing of houses, temples, palaces, &c. The scheme, or projection of a building, is usually laid down in three several designs or draughts. The first is a plan, which exhibits the extent, division, and distribution of the ground
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into apartments and other conveniences. The second shews the stories, their heights, and the external appearances of the whole building: and this is usually called the design or elevation. The third is commonly called the section, and shews the inside of the fabrick. From these three designs, the surveyor makes an estimate of the charges of the whole building, and the time requisite to complete it. As to the antiquity of Architecture; Architecture is hardly inferior, in point of antiquity, to any other art. Nature and necessity taught the first inhabitants of the earth to build or erect huts, tents and cottages; from which in process of time, they gradually advanced to erecting more regular and stately dwellings, adorned with variety of ornaments, proportions, &c. Antient writers ascribe the carrying of Architecture to a considerable height to the Tyrians, who were therefore sent for by Solomon to erect his temple. But Villapandus will not allow those who were sent for from Tyre, to be any more than inferior workmen, such as artificers in gold, silver, brass, &c. and supposes that the rules of Architecture were delivered by God himself to Solomon. So that the Tyrians rather learned Architecture from Solomon, than Solomon from them; which they afterwards communicated to the Egyptians, the Egyptians to the Greeks, and the Greeks to the Romans. He undertakes to prove, that all the beauty and advantages of the Greek and Roman fabricks were borrowed from Solomon's temple. Sturmius produces several passages in Vitruvius in confirmation of this, where the rules, laid down in his lib. iv. cap. 11. and lib. v. cap. 1. correspond exactly with what Josephus relates of the Jewish temples, in his sixth book. But the twenty-third chapter of Isaiah, ver. 8. informs us to what a pitch of magnificence the Tyrians and Egyptians had carried Architecture before it came to the Greeks; and Vitruvius also gives an account of the Egyptianoccus, their pyramids, obelisks, &c. Yet, in the general account, Architecture seems to be wholly of Greek original. Three of the regular orders or manners take their names from the Greeks, as Corinthian, Ionic, and Doric; and we have scarce a part, a single member, or moulding, but what is transmitted to us with a Greek name. And it is certain the Romans, from whom we take it, borrowed all they knew entirely from the Greeks; nor do they seem to have had, before, any other idea of the grandeur and beauty of superb buildings, but what arises from magnitude, strength, &c.

Architecture is supposed to have arrived at its glory in the time of Augustus Cæsar; but that, as well as other polite arts, were neglected under Tiberius. Nero, indeed, notwithstanding his vices, retained an uncommon passion for Architecture; but luxury and dissoluteness had a greater share in it than real magnificence. In the time of Trajan, Apollodorus excelled in the art; by which he obtained the favour of that prince, and erected that famous column, called Trajan's, which is remaining to this day.

day. But after this time, Architecture began to decline ; though it was, for some time, supported by the care and magnificence of Alexander Severus ; yet it fell with the Western empire, and sunk into corruption ; from whence it did not recover for the space of 1200 years. All the most beautiful monuments of antiquity were destroyed by the ravages of the Visigoths ; and from that time, Architecture became so coarse and artless, that their professed architects were totally ignorant of just designing, wherein the whole beauty of Architecture consists : hence a new manner of Architecture, called Gothic, took its rise.

Charlemagne industriously laboured for the restoration of Architecture : and the French applied themselves to it with success, under the encouragement of Hugh Capet. His son Robert prosecuting the same design, the modern Architecture, by degrees, ran into as great an excess of delicacy, as the Gothic had before done of massiveness. To these we may add the Arabesk, Moresk, or Moorish Architecture, which were much of the same nature with the Gothic ; except, that as the former was brought from the North, by the Goths and Vandals, the latter was brought from the South, by the Moors and Saracens. The Architects of the thirteenth, fourteenth, and fifteenth centuries, who had some knowledge of sculpture, seemed to make perfection consist wholly in the delicacy and multitude of ornaments, which they lavishly bestowed on their building ; but frequently without conduct or taste. In the two last centuries, the Architects of Italy and France assiduously endeavoured to retrieve the primitive simplicity and beauty of antient Architecture ; nor did they fail of success : insomuch, that now our churches, palaces, &c. are built entirely after the antique.

Civil Architecture may be distinguished, with respect to the several periods or states of it, into Antique, Antient, Gothic, Modern, &c. Another division of Civil Architecture arises from the different proportions, which the different kinds of buildings rendered necessary ; that there might be some adapted to every purpose, according to the bulk, strength, delicacy, richness, or simplicity required. Hence proceeded the five orders or manners of building, all invented by the ancients, at different times, and on different occasions, viz. Tuscan, Doric, Ionic, Corinthian, and Composite. That which forms an order, is the column, with its base and capital, surmounted by an entablature, consisting of architrave, freeze, and cornice, sustained by a pedestal. We have no Greek authors now extant, on Architecture : the first who wrote upon that subject, was Agathereus, the Athenian. He was seconded by Democritus and Theophrastus. Of all the antients, Vitruvius is the only author we have entire ; though he relates, that there were seven hundred Architects in Rome in his time. Vitruvius, in the time of Augustus, wrote a complete System of Architecture, in ten books, which he dedicated to that prince.

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The moderns censure two things in this excellent work, viz. want of method and obscurity. The mixture of Latin and Greek in Vitruvius, is such, that Leon. Bapstist. Alberti has observed, that he wrote Latin to the Greeks, and Greek to the Latins: he also says, that there are a-bundance of things superfluous and foreign to the purpose contained in that performance. For this reason, M. Perrault has extracted all the rules out of the prolix work of Vitruvius, methodized them, and published them in a small abridgment. Several authors have attempted to explain the text of Vitruvius, particularly Philander, Barbaro, and Salmasius, in notes added to their several editions in Latin; Rivius and Perrault, in the notes to their German and French versions; and Baldus, in his *Lexicon Vitruvianus*. M. Perrault has also composed an excellent treatise of the five orders, which may be considered as a supplement to Vitruvius, he having left the doctrine of the orders imperfect.

The authors who have written on Architecture since Vitruvius, are Leon. Baptist. Alberti, who published in Latin ten books of the art of building, designing to outvie Vitruvius; but he has not, however, succeeded in his design, though his books contain a number of excellent things; for he is deficient in the doctrine of the orders.

Sebast. Serlio also wrote seven books of Architecture, five of which were concerning the five orders, and were published in 1602; through the whole of which he strictly adheres to Vitruvius's rule: the seventh was published afterwards, in the year 1675. Philip de Lorme published nine books of Architecture, in French, in the year 1667. J. Barozzio de Vignola published his rules of the five orders, in Italian in the year 1681; which have been since translated, with considerable additions, by Daviler, under the title of *Cours d'Architecture*. Also Vincent Scamozzi's Idea of Universal Architecture was published in Italian, in the year 1615; and Car. Phil. Dieussart's Theatre of Civil Architecture, was published in High Dutch, in the year 1697; in which he not only delivers the rules of Architecture, but also explains and compares the five orders, as laid down by Palladio, Vignola, Scamozzi, &c. R. Freart de Cambray also pursued the same design in French, in a parallel of the antient Architecture with the modern, which was published in 1650, and translated into English by Mr. Evelyn, with additions. Fr. Blondel, director of the Royal Academy of Painting, &c. in 1698, gave a course of Architecture in French, which was a collection from all the celebrated writers upon the subject of the orders, &c. Nich Goldman has also done infinite service, by reducing the rules and orders of Architecture to a further degree of perfection, and shewing how they may be easily delineated, by means of certain instruments invented by him. This treatise was published in Latin and High Dutch in 1661. Also, Sir Henry Wotton has laid down the elements of Architecture, which have been

reduced by Sturmius and Wolfius, to certain rules and demonstrations. And, by these gradations, Architecture has been brought to a mathematical art; by the first in his *Mathesis Juvenelis*; and by the second, in his *Elementa Matheseos*, tom. II. an. 1715.

Military ARCHITECTURE, is the art of strengthening and fortifying places, to screen and defend them from the insults of enemies, and the violence of Arms. This is generally called Fortification, and consists in the erecting forts, castles, fortresses, with ramparts, bastions, &c.

Naval ARCHITECTURE, is the art of building, or constructing of ships, gallies and other floating vessels for the water; also ports, moles, docks, &c. on the shore.

ARCHITECTURE, in Perspective is a kind of building, wherein the members are of different measure, and modules, and diminish proportionably to their distance, in order to make the work appear longer and larger to the view than it really is. Of this kind is the celebrated pontifical stair-case of the Vatican, built in the time of Pope Alexander VII. by the cavalier Bernini.

Counterfeit ARCHITECTURE; that which consists of projectures, painted either in black or white, or colours after the manner of marble; as may be seen performed in the facades and palaces in Italy, and in the pavillions of Marli. This painting is done in fresco, upon plastered walls, and in oil on stone walls. Also, under the title of *Counterfeit Architecture*, is to be comprehended; that which may be also called scene-work, *i. e.* what is painted on slight boards, or wooden planks, on which columns, pilasters, and other parts of building, seem to stand out in relievo; the whole being coloured, in imitation of various marbles, metal, &c. serving for the decorations of theatres, &c.

ARCHITRAVE, of ἀρχή chief, and *trabs*, L. a beam, is that part of a column, or order of columns, which lies immediately upon the capital; the Architrave is the lowest member of the frieze, and even of the whole entablature. The architrave is supposed to represent the principal beam in timber buildings; from whence it takes its name, as above. It is however objected by some, that they do not perfectly understand what is meant by the principal beam of a building; because they do not suppose it can properly be applied to all buildings, but to some peculiar kinds, such as are called Porticos, Piazzas, and Cloisters; by which are usually understood long galleries, or walking places, whose roofs are supported by columns or pillars, at least, on one side, which have not arches arising from them, to support the superincumbent part of the fabrick; but have a beam resting or lying upon the tops of the columns, by which the superior part of the edifice is supported; for which reason it is probably called the principal beam. Indeed, according to Mr. Perrault's definition, it is the first member of the entablament, being that which bears upon the column, and is made sometimes of a single summer, as appears in the

he most ancient buildings ; and sometimes of several haunches, as frequently seen in the works of the moderns. Architrave is also sometimes called the reason-piece or master-beam, in timber buildings ; as porticos, cloisters, &c. In chimnies it is called the mantle-pieces, and over the jaumbs of doors, and lintels of windows, hyperthyron.

Architrave doors, are those which have an architrave on the jaumbs, and over the door, upon the cap-piece, if streight, or upon the arch, if the top be curved.

Architrave windows, of timber, are usually an ogee, raised out of the solid timber, with a list over it ; though sometimes the mouldings are struck, and laid on, and sometimes cut in brick. The upper fatio is called the header, or heading Architrave. Architects take great latitude as to Architraves, some using more members than others, and many of them having two or three forms of Architraves. Sometimes they are according to one of the five orders of Architecture, and sometimes they are according to the fancy of the workman. Some, for an Architrave round a door, have put first a small head next the door, then a broad plinth, or fatio, and above that an ogee and list. There are Architraves of stone and brick, as well as of timber. Brick Architraves are usually cut in the length of a brick, and sometimes in the length of a brick and a half, and then every other course alternately consists of the breadth of two bricks ; the upper one, on which the ogee is cut, and part of the upper fatio, they call header, or heading Architrave ; and the breadth or head of bricks, on which the lower fatio, and part of the upper one is cut, they call a jack Architrave of stone. Architraves are distinguished into five kinds, viz. Tuscan, Doric, Ionic, Corinthian, and Composite, according to the five orders of columns. Of the parts, or members of Architraves ; these are more numerous than the kinds, because there are two different sorts of Architraves to some of the orders ; and what greatly increases the number is, that some authors differ from others in the form of the same orders.

The Tuscan Architrave, according to Vitruvius, ought to be half a mode, or M. in height. This general member he has described in two forms : the first consists of three parts or members, viz. two fatios and a cymatium, and is thus divided : the whole height is divided into six parts ; which are divided after this manner, viz. the uppermost sixth part is the cymatium ; which being subdivided into three, the upper is to be the fillet, and the two lower parts the ogee. The five grand divisions which remain, are to be divided into nine parts, five of which are to be the upper fatio, and the other four the lower one. His second form, consisting of but three members, or parts, is as follows, viz. a large plinth or planchier, a casement and a large fillet, and is subdivided as follows : the whole height is divided into six ; and the upper part is for the fillet (which projects in square beyond the plinth ; the fifth part is for the casement, which rises from the plane of the plinth, and ends in a quadrant at the lower corner

corner of the fillet) the other four parts remaining are for the plinth, or planchier, or fatio. Palladio has also two distinct forms for the Tuscan Architrave: the first consists of two fatios and a list: the lower fatio is twelve and a half M. high, the upper fatio is seventeen and a half M. ending with a quadrantal casement, rising with its plain, and ending with the lowest corner of the list; the list is five M. high; and so the whole height of the Architrave is thirty-five M. His second Architrave is only a plain fatio of thirty-five M. high. Scamozzi, according to his delineation, makes the Tuscan Architrave thirty-one and a half M. high; which he divides into four parts, or members, viz. two fatios, a list, and a plinth. He makes his first fatio ten M. his second sixteen and a half M. his list one and a half M. and his plinth three and a half M. all which make thirty-one, one-third M. Though, according to this verbal account, he says, it must be thirty-two and a half M, except it be a typographical error. Vignola describes the architrave with the same parts, height, and form, with Vitruvius's second.

The Doric Architrave. This Architrave, according to Vitruvius, is half an M. in altitude, which he delineates in two forms: the first he divides into seven parts; the uppermost of which is the tænia; the other six parts which remain, he makes a fascia under the tænia, and places drops, whose height are one-seventh of the Architrave: a fourth of this seventh is the fillet, to which the drops hang; the drops are in number six; placed under, and of the same breadth with the triglyphs. His second figure of his Architrave consists of the same members with the first, and the whole height is equal to the first. But he divides the altitudes only into six parts; the upper one of which is his tænia, and the other five the fascia; the uppermost of which is the altitude of his drops, which have a list, which is one quarter of their height. Palladio makes this Architrave with the same altitude with Vitruvius, but of a different form; for he makes it to consist of three parts or members, viz. two fascias and a tænia: he divides the whole altitude into six parts, one of which, being five M. he assigns for the guttæ, drops, or bells, and the listella of the drops is one-fifth of the whole height, and one-third M. and the drops two and two-thirds M. the tænia above the drops (or rather of the Architrave) he also makes four and a half M. and the prima (or upper) fascia, fourteen one-half M. and the secunda (or lower) eleven M. in all thirty M. which is the whole altitude. Scamozzi (according to the portraiture of this Architrave) makes it thirty-five M. in altitude; and he makes this grand member to comprehend three petty members, viz. two fascias and a list; the dimensions of which are, beginning at the top, and so descending; the list he makes five M. the upper fascia eighteen M. and the lower one twelve M. in all thirty-five M. divides the drops or bells thus: he designs the list above to be one-half M. and the bells or drops four one-half M. so that the whole height is six M. Vignola makes this Architrave thirty M. in altitude, the same as Vi-

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truvius and Palladio ; both which he also imitates in the lesser member ; for he has two distinct forms ; one resembling that of Vitruvius, which contains two members or parts, the one a list, the other a fascia ; his other form is like that of Palladio, comprehending three petty members, viz. one tænia, and two fatios.

The Ionic Architrave : according to Vitruvius's order, this grand member ought to be half an M. in height. He describes two forms of Architraves in the Ionic order, viz. one for the Ionic column, without a pedestal ; and the other with a pedestal. He composes that without a pedestal of four minuter parts, viz. three fascias, and a cymatium ; which is divided as follows : he divides the whole altitude into seven parts, the uppermost of which he allots to the cymatium, which he subdivides into three parts ; the uppermost of which is for the list, and the two remaining for the ogee. The other six remaining parts are divided into twelve ; five of which he makes the upper fascia, four of the middle one, and three the lowest. The other for the Ionic column, with a pedestal, he proportions as follows, viz. he reckons the whole altitude of the Architrave, freeze and cornish, to be two mod. which are divided into ten parts ; three of which are for the Architrave, (which is thirty-six M.) which he distinguishes into six minuter parts, or members ; which he names as follows, (beginning at the top, and to descending) viz. a fillet, a cima, a thoros, and three fascias ; all which smaller members he thus finds. viz. first he divides the whole altitude into six equal parts ; the uppermost of which parts he subdivides into four parts, the highest of these four is for the fillet, the two next of the four are allotted to the cima, and the fourth, that remains, is for the thoros. The five grand divisions which remain are subdivided into twelve, which are distributed as follows, viz. five for the upper, four for the middle, and three for the lower fascia. Palladio assigns thirty-four M. for the height of this Architrave. According to his scheme of this member, it is composed of seven parts, viz. a list, a cima, three fascias, and two astragals ; which are proportioned as follows : to the list (which is above the cima,) he allots two three-tenths M. to the cima, four three-fifths M. to the upper fascia, he allows ten one-eighth M. to the astragal, at its foot, one-third M. the middle fascia is to contain seven fifty-two sixtieths ; and the astragal at its foot one-third M. to the lower fascia he allows six nine tenths M. All which being added together, amount to thirty-four one half M. Scamozzi makes the Ionic Architrave thirty-five M. high, and of the same form with that of the second of Vitruvius, consisting of six parts, viz. a list, cima, astragal, (or thoros) and three fascias ; which he proportions as follows : he allots two one-half M. to the list, to the cima four, to the thoros two, to the upper fascia eleven one-half, to the middle one eight one-half, and to the lower one six one-half. Vignola al-

lows thirty-seven one-half to the Ionic Architrave in altitude, and as to the form, it is much the same with that of Vitruvius's first order.

The Corinthian Architrave, according to Vitruvius, ought to be half a mod. in height; but it is to be observed, that this is for the Corinthian column without a pedestal. This member he divides into seven parts, of which the uppermost is the cymatium; the six remaining parts he divides into twelve, of which he allots five to the upper fascia, also allowing one-eighth of this fascia for a bead at its foot, and makes the lower fascia of the three remaining parts. The Architrave for the Corinthian order with a pedestal, according to Vitruvius, is allowed a greater altitude than that without, consisting of the same members, both as to number and form with the former Architrave, but differing in dimensions. The whole altitude of the Architrave ought to be one quarter of the altitude of the column, nearly to two-eighths of the body of the column below, which is — to forty-one half M. This altitude he divides into seven equal parts, and makes a cymatium at the uppermost of these seven, and divides the six that remain into twelve equal divisions; of which, five he allots to the upper fascia, four to the middle, and three to the lower one. He subdivides the upper and middle fascia, each into eight parts, and allows one of these eighths for a bead at the foot of each of these fascias. Palladio makes this Architrave to contain eight parts, viz. one list, one cima, three beads, and three fascias, the height of all which he allows to be thirty-six M. Which are thus subdivided, viz. to the list, (or upper member) he allows two three-quarters M. the next in order is a cima, and the next in order is two M. high, at the foot of which is a bead; after this is the upper fascia, its bead at its foot, both which contain about thirteen one-half M. After this is the middle of the fascia, and its bead at its foot, which contain eight one-eighth M. and last of all, the lower fascia, which is six one-quarter M. in height. Scamozzi makes the whole altitude of this Architrave to be forty M. which he subdivides into nine small members, (beginning at the top, and descending) a list of two M. a casement three one-quarter M. and an ogee of two three-quarters, a bead of one one-half M. a fascia of twelve M. and its bead of two M. the middle fascia eight one-half M. and its bead one three-fifths M. and the lower fascia six one-half M. which being all added together, make forty M. Vignola makes the Corinthian Architrave forty-five M. in height, and subdivides it into eight smaller members, as Palladio does, viz. a list, a cima, three beads, and three fascias.

The Composite Architrave. Vitruvius makes the Architrave of this column, and freeze, and cornice all of an equal height, viz. each of which is equal in height to the diameter of the column above, just under the capital, which is ten-twelfths of a mod. fifty M. This Architrave he divides into six parts, one of which is for the cymatium, and its
boultin

boultin under it: this upper sixth part he divides into four, and allows one of these four for the fillet above the cima, and the two next for the cima itself; and appoints the fourth, that remains, for the small boultin under the cima; and subdivides the other five grand divisions into twelve minuter parts, assigning five of them for the upper fascia, four for the middle one, and three for the lower; and also subdivides the middle fascias each into eight parts, allowing one of these eights for a bead at the foot of each of these fascias. Palladio makes this Architrave forty-five M. in height, and distributes them into seven particular minuter members (beginning at the top, and so descending:) first, he allows two one-eighth M. to the list, four one eighth to the casement, to the ogee nine one-quarter, to the bead one one-quarter, to the upper fascia fifteen M. two one-quarter to the ogee at its foot, and eleven M. to the lower fascia. Scamozzi makes this Architrave forty M. in height, which he distributes among these eight following members, viz. (descending:) first, a list of two M. secondly, an ogee of four one-half M. thirdly, an astragal of two M. fourthly, the upper fascia of eleven three-quarters M. fifthly, a bead at its foot of two one-quarter M. sixthly, the middle fascia of eight one-half M. seventhly, at its foot, one-half M. eighthly, the lower fascia of six one-half. Vignola makes this Architrave forty-five M. in height, which he divides into seven members, a list, a casement, a boultin, a fillet, a fascia, a bead, and a fascia.

Measuring of Architraves: Architraves in buildings (either of brick, or stone) are usually done by the foot lineal; and therefore, having taken the length in feet, you have also the content the same time. Architraves, says Mr. Skaife, are taken (or measured) with a string over the top, and down both jambs for the length; and girted round the face and back to the wall for the breadth. The faces of an Architrave, says M. Le Clerc, ought not to have ornaments, but to be left plain; and particularly when the frieze is enriched.

The proportion of Architraves by equal parts.

The Ionic Architrave is divided into nine, giving one and three-fourths to the first face, two and a half to the second, and three to the third; one and one-fourth to the ogee, and one half part to the fillet: the projection of the second and third faces have a quarter of a part each, and the whole two of these parts.

The Corinthian Architrave is divided into nine, giving one and a half to the first face, one-fourth to the small bead, two to the second face, three-fourths to the small ogee, two and a half to the third face, half a part to the bead, one to the ogee, and half a part to the fillet; the projection of the second face hath one-fourth of a part, the third face one of these parts, and the whole two.

The

The height of the Composite Architrave into nine, giving two and a half to the first face, one-half part to the ogee, three and one-half to the second face; one-fourth to the astragal, three-fourths to the ovolo, one to the hollow, and half a part to the fillet: the projection of the second face, hath one-half a part, the ovolo one and one-fourth, and the whole two.

AREA, in Architecture, any plain surface whereon we walk, &c.

AREA, in Geometry, the superficial content of any figure. Thus if a figure, *exempli gratiâ*, a field be in the form of a square, and its side be thirty feet long, its area is said to be 900 square feet, or it contains 900 little squares, each a foot every way.

ARITHMETIC, the art or science of computing by numbers. We have very little intelligence with regard to the invention of this inestimable science. Some attribute it to Seth, others to Noah, and the Turks to Enoch, whom they call Edris. Many imagine it had its rise with the introduction of commerce, and consequently fix its epocha with that of the Tyrians, who did not begin to flourish till about a thousand years after the flood. Josephus tells us, that Abraham taught the Egyptians Arithmetic during the time of his sojourning in their country: though Pliny and Strabo say, that the inundations of the Nile gave occasion to their inventing both Arithmetic and Geometry. It is however certain, both these sciences were held in the highest veneration, and committed to the care of their priests, who founded their theology on them. The Greeks owed their knowledge in Arithmetic to the Egyptians; and Pythagoras built his philosophical system upon numbers, affirming, that the nature of numbers extends through the whole universe, and that the knowledge of numbers is the knowledge of the Deity. The antient Arithmetic, however, fell far short of the modern; their notation was very imperfect, and consequently the operations abstruse and tedious. They wanted the cypher, or a character that of itself signifies nothing, to fill up a place, and change the value of their numbers in a decuple progression, their series extending only to nine. We owe our present notation to the genius of the eastern nations, and received it from the Arabians, who learned it from the Indians. But when, or by whom it was invented, cannot be known. It was known in Europe before the year 1000, and in Britain 1150. The oldest treatise extant on the theory of Arithmetic, is 7th, 8th and 9th books of Euclid's Elements; where he has delivered the doctrine of proportion, and that of the prime and composite numbers. After the Arabian notation was known in Europe, we find many writers both upon the theory and practice; and as learning advanced, so did the knowledge of numbers, which by degrees received the greatest improvements.

The fundamental rules of Arithmetic are four, namely, addition, subtraction, multiplication, and division. But besides these, there are other rules

rules contrived for facilitating computations of every kind ; as the rule of proportion, rule of three, or golden rule, the rules of fellowship, barter, exchange, interest, extraction of roots, &c.

Instrumental ARITHMETIC, is that where the common rules are performed by means of instruments, contrived for ease and expedition, as by the lines on a Carpenter's rule, a sector, &c.

ASH, *fraxinus*, in botany, a genus of trees. Next to the oak itself, it is reckoned one of the most useful sorts of timber we have, serving for so many uses for the carpenter, cooper, &c. and, like the elm, is good for mortises, tenons, &c. it hath pinnated leaves, which mostly end in an odd lobe: the male flowers, which grow at a remote distance from the fruit, have no petals, but consist in many stamina; the ovary becomes a seed-vessel, containing one seed at the bottom, shaped like a bird's tongue.

There are six species of this tree; all which may be propagated by budding them into common Ash; upon which they will all take very well, and become hardier than upon their own stock: but these budded trees never grow so large as those which are raised from seeds; nor will the stock and bud keep pace in their growth; so that there will be a remarkable difference in the size of the stem, and above the place where they are budded: but few of these foreign kinds have yet arrived at an age to produce seeds in England, the nursery gardeners having been obliged to propagate these sorts by budding and grafting.

The common Ash is propagated by sowing the keys in October or November, on a bed of fresh earth, which should be well dug, and cleansed, from roots and noxious weeds. A small bed will be sufficient to raise a great quantity of these trees. The seeds should be sown pretty thick, and covered about half an inch thick with earth. These seeds many times continue until the second spring before they come up; you should, therefore, let the bed remain undisturbed, and keep it clean from weeds. When your plants come up, you must also keep them very clear from weeds, and if the season should prove very dry, if you give them now and then a little water, it will greatly promote their growth. In this bed they should remain no more than the autumn following, provided they have grown well; at which time you should prepare a nursery, which should be well dug and cleared as before; then with your spade loosen the roots of your plants before you draw them up, otherwise you will endanger the breaking of them. When you have drawn them out of the ground, shorten the downright tap root, but do not cut off any of the lateral fibres; then, having prepared your ground, plant them in rows, three feet distance, row from row, and a foot asunder in the rows, closing the earth to the roots with your feet. In this nursery they may remain two or three years, observing to keep them clear from weeds, as also to trim up the side branches every winter, and dig the ground between the rows; after

K

which

which time you may remove them where they are to remain for good. This tree will grow upon almost any soil; but the better the soil is, the more the tree will increase in bulk. Notwithstanding which, it should not, by any means, be planted too near the other trees or plants; for it will exhaust all the goodness of the soil from them; and the shade of this tree is malignant to most other plants. The distance they should be planted is eight feet square; and, after they have been planted one year, you may cut down every other tree, choosing such of them as are crooked, within six or eight inches of the ground; this will cause them to make many strong, vigorous shoots; which, in seven or eight years time, will be fit for arbour poles, or to make hoops; and the other straight trees may be suffered to grow for other timber; the number of which trees may be lessened, as they increase in bulk, leaving still the most promising ones to grow for larger timber. If a wood of these trees is rightly managed, it will turn greatly to the advantage of its owner; for by the underwood, which will be fit to cut every seven or eight years, for the uses abovementioned, there will be a continual income, more than sufficient to pay the rent of the ground, and all other charges; and still there will be a stock preserved for timber, which, in a few years, will be worth forty or fifty shillings per tree.

This timber is of excellent use not only to the carpenters but to the wheel-wrights, and cart-wrights, for ploughs, axle-trees, wheel-rings, harrows, bulls, oars, blocks for pullies, and many other purposes. The best season for felling of these trees is from November to February; for if it be done too early in autumn, or too late in the spring, the timber will be subject to be infested with worms, and other insects; but, for lopping of pollards, the spring is preferable for all soft woods.

ASHLAR, a term used by builders, by which they mean common freestones, as they come out of the quarry, of different lengths and thicknesses. As to the goodness of the stones, either for their durableness or largeness: their durableness is only to be known by experience, for at the first opening of a new quarry it is uncertain how the stones may prove: for some stones, when they are first taken out of the quarry, are very soft and friable, and will moulder to sand by being exposed to the air only a few years: whereas others of those soft stones, will be indurated or hardened, by being exposed to the air. Those stones which come hard out of the quarry, are generally durable, being of a more firm and solid consistence. As to their largeness, I need only observe, that large stones must certainly be better, and make firmer work than small ones; which are only fit for filling work in thick walls; or to be used in those places where the country affords no better.

Key and ashlar fronts of Portland stone the masters charge 1 s. 6d. per foot superficial.

Surveyors

Surveyors allow from 1 s. 3 d. to 1 s. 6 d.

Besides, measuring the solidity of the key-stones, or bonds, which go through the wall, and charged per foot cube 3 s. 9 d.

The value of materials to a foot of key and ashlar work, considering the sawing, and the veins that often are detrimental in the opening of a block of stone, which cannot before be seen, is worth, with materials to setting, per foot superficial 9 d. labour to squaring, rubbing, fitting, &c. is worth 6 d. therefore the price allowed by surveyors is not in the least exorbitant at 1 s. 6 d.

ASHLERING, quartering to tack to in garrets, about two feet and a half, or three feet high, perpendicular to the floor, up to the under side of the rafters.

ASSEMBLAGE, the joining or uniting of several things together, also the things so joined or united; of which assemblages, there are various kinds and forms used by joiners, as with mortises, tenons, dove-tails, &c.

ASSEMBLAGE of Orders. M. Le Clerc says, when two columns are placed over one another, they must be of different orders, the stronger always to support the weaker. For instance, 1. The Doric may be placed over the Tuscan, the Ionic over the Doric, the Roman over the Ionic, the Spanish over the Roman, the Corinthian over the Spanish. 2. That the upper order should always be less massive than the under, agreeable to the maxim, that the *strong* ought to support the *weak*. 3. That the columns ought to stand exactly over each other; so that their two axis's may be both found in the same perpendicular. 4. The distances between the lower columns, must be determined by the intercolumniations of the order, that is, without pedestals; and the distance of the upper columns, by the intercolumniations of the order, with pedestals, taking care that the first order be mounted on a pretty high socle, or an ascent of several steps, to serve instead of a continued pedestal, or foot. He gives a pedestal to the upper order; because being confined to the breadth of the intercolumniation of the lower order, its columns, by this means, are rendered smaller, inasmuch, that the diameter of their base does not exceed that of the top of the under column; which, in his opinion, is a rule not to be dispensed with. He remarks, that Vitruvius will not allow the upper order more than three quarters of the height of the under. But if this reduction were followed, the columns would be too small, and consequently too far asunder, with respect to their height, if placed one over another.

In order to find the mod. of an order that is to be placed over another, he proposes, for instance, to place the Ionic over the Doric; and advises,

To consider, first, that in the Doric order, without a pedestal, which is to give the measures of that first order, that the columns are placed at the distance of eleven M. from each other, in portico's. That in the
Ionic

Ionic order with a pedestal, the columns are fifteen M. a-part ; and that to place this order upon the Doric, you must divide the intercolumn, or its equal, into fifteen equal parts ; one of which fifteen will be the M. for raising the Ionic order, with its pedestal. He likewise observes, that when two porticos are placed over each other, the higher ought to be regulated by the lower : he means, that the width of the upper arch should be made equal to that of the under ; it being proper, that the two arches should have the same width. On such an occasion, the lower arch may be made ten or twelve minutes narrower than usual, that the width of the upper arch may be better proportioned. When columns are to be without porticos, he says, there need be only four triglyphs made between the Doric columns, that is, an interval of eight mod. four minutes, which are equivalent to twelve M. in the Ionic, as appears by the rule of proportion ; and that the same thing may be observed of coupled columns.

The Roman order, he observes, does not match perfectly well with the Ionic ; because its capital is higher, with respect to its column, than the Ionic capital, with respect to the Ionic column ; and because the denticles of the Ionic appear somewhat weak underneath the modillions of the Roman. However, the Roman order, being in this place less than the Ionic, the disproportion between their capitals, becomes less sensible, as well as that between the denticles of the one and the modillions of the other.

To find the M. for raising a Corinthian column over a Spanish order he says,

It is evident, that the modillions of the upper order must be the same in number with those of the under, in order to have them exactly over one another. Now the inter-modillions of the Corinthian order containing just forty minutes, where the column has no pedestal, these forty minutes must be multiplied by the number of modillions, which being eleven, the product will be four hundred and forty ; which being divided by thirty, the mod. the quotient will be fourteen M. twenty minutes ; which is the division of the scale for raising the Corinthian order. He observes, that there is a difficulty in placing three orders over each other, which consists in this ; that the second order having a pedestal, the columns of the third become a little too large at the bottom ; though so very little, that the eye can hardly perceive it. But this inconveniency, however, may be remedied, by taking the excess away imperceptibly, wholly from the base of the column. This will indeed occasion a little swelling ; but that will do no prejudice. Again, he is of opinion, it would not be proper to undertake the placing of more than three orders of columns over one another. For, besides that in the fourth order, the columns would be too far asunder ; in respect to their height, it ought likewise to be considered,

sidered, that four columns raised over one another, cannot be very strong: indeed, the first may have a Rustic, whereon it is raised, and which may serve it as a foot.

ASTRAGAL, in architecture, a little round moulding, in the form of a ring, or bracelet, serving as an ornament at the tops and bottoms of columns.

The Astragal is also sometimes used to separate the fasciæ of the architrave; in which case it is wrought in chaplets, or beads and berries.

It is likewise used both above and below the lists, adjoining immediately to the edge or square of the pedestal.

M. le Clerc observes, that the Astragal of a column ought always to be plain, excepting in the Ionic order, where the Astragal of the shaft is converted into a chaplet of pearls and olives for the capital.

Astragal or *Baguette*, has the figure of a staff, when it is joined to a fillet; the height of which fillet, M. Le Clerc divides into three parts; two of which he gives to the Astragal. And this rule, he says, he observes upon all occasions.

This Astragal is sometimes carved with pearls and olives, which the French call *Pater-nosters*.

ASYMPTOTES, are properly straight lines, which approach nearer and nearer to the curve, they are said to be Asymptotes of; but if they and their curves are indefinitely continued, they will never meet.

Asymptotes are also tangents to their curves, at an infinite distance. And two curves are said to be *Asymptotical*, when they continually approach to each other, and if indefinitely continued do not meet.

ATLASSES, in architecture, a name given to those figures, or half figures of men, so frequently made use of instead of columns or pilasters, to support any member in architecture, as a balcony, or the like. These are also called *Telamone*.

ATTIC, in its general sense, signifies something relating to Attica, or the city of Athens. It is used in architecture for a kind of building, wherein there is no roof or covering to be seen; being thus called because usual at Athens.

Attic, or *Attic Order*, is a sort of little order raised upon a larger one, by way of crowning, or to finish the building. It is also sometimes used for the conveniency of having a wardrobe, &c and, instead of regular columns, has only pilasters of a particular form.

Attic Order, according to M. Le Clerc, is a kind of rich pedestal. Some architects give it the several capitals of all the orders of columns; but, he says the Ionic, Roman, and Corinthian, do not in the least become it. It is his opinion, that it is best only to distinguish the capitals by a difference in their mouldings; which may be made more or less simple, and more or less delicate, according to the relation they are to bear to the architecture underneath.

The name *Attic*, is also given to a whole story, into which this order enters ; this little order being always found over another that is greater.

The pedestal, or false pilaster, he observes, ought always to have the same breadth with the column or pilaster underneath ; and its height may be equal to a third, or even half of the same column or pilaster, by which it is supported.

Attic of a roof, is a kind of a parapet to a terras, platform, &c.

Attic continued, that which encompasses the whole pourtour of a building, without any kind of interruption, following all the jets, the returns of the pavilions, &c.

Attic interposed, is one situate between two tall stones, frequently adorned with columns or pilasters.

ATTIC BASE, a peculiar kind of Base, used in the Ionic order by ancient architects ; and also by Palladio, and other moderns, in the Doric. It is the most beautiful of all the Bases.

ATTITUDE, in sculpture and painting, the posture of a statue or Figure, or the disposition of its parts ; by which we discover the action it is engaged in, and the very sentiments supposed to be in the mind. To represent these in a strong and lively manner, constitutes what is called a good impression.

ATTRIBUTES, in sculpture, &c. symbols added to several figures, to denote their peculiar office and character ; as a club is the attribute of Hercules ; a trident, of Neptune ; a palm, of Victory ; the eagle, of Jupiter ; a peacock, of Juno, &c.

AUREOLA, a kind of crown of glory, given by statuaries, &c. to saints, martyrs, &c. as a mark of the victory they have obtained.

AXIS, in its primary signification, signifies a line, or long piece of iron or wood, passing through the center of a sphere, which is moveable upon the same.

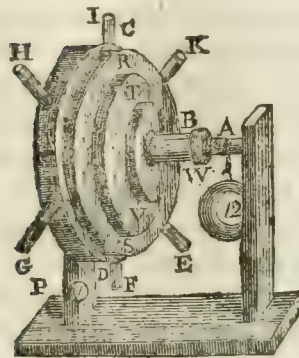
Spiral Axis, in architecture, the Axis of a twisted column drawn spirally, in order to trace the circumvolutions without.

Axis of the Ionic Capital, a line passing perpendicularly through the middle of the eye of the volute.

AXIS, in Optics, a ray passing through the center of the eye ; or it is that ray, which, proceeding from the middle of the luminous cone, falls perpendicularly on the chrytaline humour, and consequently passes thro' the center of the eye.

Axis, in *Peritrochio*, one of the five mechanical powers used to raise weights to a considerable height. It consists of a peritrochium, or wheel, concentric with the base of a cylinder, and moveable together with it about its Axis.

Because



Because, in this machine, the wheel and its Axis move together, it is evident that, in one turn of the wheel, when the power *P* descends a length equal to the circumference of the wheel, the weight *W*. will be raised an equal height to the circumference *A*, by the winding of the rope, which carries the weight upon the said Axis. And because, when there is an equilibrium between two weights, as *W* and *P*, there must be a reciprocal proportion between the masses and velocities; *W* will be to *P*, as the circumference of the wheel is to that of the Axis (supposing the thickness of the rope to be inconsiderable) or as the semi-diameters of the wheel to the semi-diameter of the Axis; for the semi-diameters of different circles are in the same proportion to one another as their circumferences. The Axis in peritrochio may also be considered as a lever of the first kind; for the fulcrum will be in the middle of the Axis *A*. If, therefore, lines be drawn from the middle of the Axis to the power and weight, parallel to the horizon, the radius, or semi-diameter of the wheel, will be the distance of the power, and the radius of the Axis the distance of the weight; and when these radii are reciprocally as the weight and power, the machine will be in equilibrio. The wheel and Axis therefore is nothing more than a perpetual lever: it has been already observed, that the thickness of the rope carrying the weight, is supposed to be inconsiderable; but as this is never the case in practice, when the weight is considerable, it will be necessary to make proper allowance for it; and this is done by adding the semi-diameter of the rope to the semi-diameter of the Axis; for the weight really hangs half the thickness of the rope beyond the Axis. It is also necessary that the line of direction in which the power acts be a tangent to the wheel; for otherwise it will not produce the same effect, as the lever to which it is applied will be shortened. If a plumb-line be applied to any part of the circumference of the wheel above the horizontal radius, it will form a chord line, connecting two points in the circumference of the wheel; and if this chord be bisected by a radius drawn from the center, the part of that radius intercepted between the center and the chord will be the length of the lever on which the power acts in that position.

The

The machine represented by the figure, is a model (made by a scale of an inch to a foot) of such an axel and wheel, as is often made use of to draw water out of a well, by means of a power drawing by a rope applied to the circumference of one of the wheels of the machine, or by pressing down successively the handles E, F, G, H, I, K, whilst another rope or chain is wound up upon the Axis A or B, a bucket hanging at it instead of the weight W. Here, in the experiment, one pound hanging at the circumference of the biggest wheel C D, will keep in equilibrio twelve pounds hanging at the smallest Axis A, or six pounds at the Axis E, and only three pounds upon the circumference T V. In the same manner, when the weight hanging at the Axis continues in the same place, and to be of the same quantity, viz. twelve pounds; then the power, which, at the circumference of the wheel C D, is equal to one pound, must be equal to a pound and an half, if it be applied to S R; but if it be applied at one of the handles at the distance of a fourth of an inch from the circumference of the wheel C D (which is the same as if a new wheel was added of half an inch more diameter); then a power equal to no more than $\frac{1}{4}$ of a pound, will keep the weight in equilibrio, and raise it, if its intensity be increased ever so little.

B

BACK NAILS, a kind of nails made with flat shanks, so as to hold fast without opening the grain of the wood, used in nailing guts together, for saving water under the eaves of a house; or by back-makers, in nailing of boards together for coolers, or any vessels made of planks or boards for containing liquors.

BAGNIO, an Italian word, signifying a bath: we use it for a house with conveniency for bathing, cupping, sweating, and otherwise cleansing the body, and very frequently for worse purposes.

BAKE-HOUSE, a room or office, or an apartment belonging to noble buildings, and other private buildings in which an oven is built. As to the position, it ought, according to the rules laid down by Sir Henry Wotton, to be placed on the south-side of any building.

BAGUETTE, in architecture, a little round moulding, less than an astragal; it is sometimes carved and enriched with foliages, pearls, ribbons, laurels, &c. Though, according to M. Le Clerc, when a Baguette is enriched with ornaments, its name is changed, and it is called a chaplet. *Baguette* is also a term used by the carpenters for a kind of astragal or hip-moulding, by which is understood the outward angle or the hips or corners of a roof; which, in square frames, where the roof is three quarters pitch, contains an angle of one hundred and sixteen degrees, and twelve minutes.

BALANCE,

BALANCE, or BALLANCE, *Libra*, one of the six simple powers in mechanics, principally used in determining the difference of weights in heavy bodies, and consequently their masses or quantities of matter. The balance is of two kinds, the ancient and the modern. The ancient or Roman, called also the *statera Romana*, or steel-yard, consists of a lever or beam, moveable on a center, and suspended near one of its extremities: the bodies to be weighed are applied on one side of the center, and their weight is shewn by the division marked on the beam, where the weight, which is moveable along the lever, keeps the steel-yard in equilibrium. This balance is still frequently used in weighing heavy articles. The modern balance now generally used consists of a lever or beam suspended exactly in the middle, having scales hung to each extremity.

The lever is called the *jurgum* or beam, and the two moieties thereof on each side of the axis, the *brachia* or arms. The line on which the beam turns, or which divides its *brachia*, is called the axis; and when considered with regard to the length of the *brachia*, is esteemed a point only, and called the center of the balance: the handle whereby it is held, or by which the whole apparatus is suspended, is called *trutina*, and the slender part perpendicular to the beam, whereby either the equilibrium, or preponderancy of bodies is indicated, is called the tongue of the balance.

BALCONY a projecture beyond the naked part of a wall or building, supported by pillars or consoles, and encompassed with a balustrade. Or it is a kind of open gallery for people to stand in to behold any public shew, as pageants, cavalcades, public entries of ambassadors, &c. in cities; or for taking the air, &c. This jutting or projective building is usually placed in the middle of a front of a house, or public hall, &c. if there be but one; and is usually level with the first floor, up one pair of stairs. Some of these are made with wood, and others with iron; wooden balconies consist of rails and balusters, and so sometimes do those of iron; but at other times they are made of cast iron, of various figures in semi-relief; and some again, of wrought iron in crail'd work, or flourishes in different forms, according to the fancy of the workman, &c.

It may be proper here to take notice of what Sir Henry Wotton says concerning all in-lets and out-lets, such as balconies, windows, &c. that they ought not to approach too near the corner of walls; it being an essential error, to weaken that part which is to strengthen all the rest. This, he says, is a precept well recorded, but is ill practised, even by the Italians themselves; particularly at Venice; where he had observed divers Pergoli, or Maucina, (as they seem to be called by Vitruvius,) which are certain balustraded out-standings, made for standing in, to satisfy the curiosity

of the fight, very dangerously set forth upon the very point itself of the mural angle.

M. Le Clerc, says, the parts of a balcony are the terras, the balustrade that incloses it, and the consoles which support it: or, to explain himself more accurately, a balcony is a piece of architecture raised in the air, inclosed with a balustrade, and supported by a little entablature, whereof the cornice, or uppermost part, makes a terras; the frieze and architrave being only continued at the bottom and sides; and the whole balcony further supported by consoles. The frieze is made with a little sweep, that the zocle of the pedestal above may not appear ill supported; and that the console coming to contract, or straighten itself at the bottom, may do it the more gracefully, without which, it would appear too heavy. The height of the consoles may be equal to the projecture; but it will be an addition both to the beauty and strength of the work, if they are made higher.

A balcony may be continued quite through the facade of a building by adding consoles, from space to space; to be disposed between the windows, which will be underneath. He is of opinion, that iron balconies will do much better than those of stone, as being lighter, and less subject to decay; which, if gilt, will be exceedingly magnificent, and a very proper ornament for a palace.

According to the modern mode of building, small balconies of iron are made before each window in the first floor; and the apertures, and consequently the windows, are begun on a level with the floor, and yet carried up to the same height, as if they had began in the usual manner.

BALDACHIN, of *Baldachino*, *Ital.* *Ba'dagium*, *Fr.* a piece of architecture in the form of a canopy, supported with columns, serving as a crown or covering to an altar. It properly signifies a canopy carried over the host in Roman catholic countries. Some also give the name of Badalchin to a shell over the front of a house.

BALKS, poles or rafters, over out-houses or barns; and among bricklayers, great beams, such as are used in making scaffolds; this term is also applied to great pieces of timber coming from beyond the seas by floats.

BALLON, in Architecture a French term, used to signify the round globe on the top of a peer, or pillar.

BALUSTRADE, a connection of a number of balusters used for defence or ornament, on balconies, terraces, and the like, and round altars. The balusters are of iron, wood, stone, or other materials, and the Balustrade, when finely executed, has an elegant appearance. We have of late, in some handsome buildings, miserably supplied the place of the antient Balustrade by Chinese rails. The Balustrade may consist of 1 or more rows of balusters, and may serve as a rest in the front of terraces, and as a defence on levels; and it is sometimes used, with great propriety and beauty, by way of
of

of separation between one part of a building and another. The baths among the antients were thus encompassed with rails, and the word expressing that separation was *Balustrum*; hence comes our word *Balustrade*; and *baluster* for the single pillar.

BALUSTER, (vulgarly called *banister*) a small pillar or pilaster, serving to support a rail, and making, when joined and continued with others, the *balustrade* we have just named. The *Baluster* may be either round or square, but it should be adorned with mouldings and other decorations, according to the richness intended to be given to the *balustrade*. Our *Balusters* of wood are usually turned, and often very handsome.

BAND, a term often used to express what we more usually call the face, or faces, *fasciæ*, of an *architrave*; but it properly expresses any flat and low member; whatever be its place; if it is not very deep.

BANDELET, derived from the French *Bandelette*, a little fillet or band, is any little band, or flat moulding, as that which crowns the *Doric architrave*. It is also called *Tenia*, from the Latin *Tania*, which *Vitruvius* uses for the same thing. It is also used by architects, to signify the three parts which compose an *architrave*.

BASE, a part placed at the bottom of a column or pilaster, as the capital is at the top. The word signifies a support of any kind, and for any thing; its derivation being from the Latin *basis*, of which this is the sense; but we have appropriated it in a manner to this lower part of columns.

The antients, in the early times of architecture, used no Bases. The *Doric columns*, in the temple of *Minerva* at *Athens*, have none, but stand immediately upon the floor of the porch. Columns afterwards came to be supported on square pieces called *plinths*, and after that on pedestals. When we see a column, of whatsoever order, on a pedestal, the *Base* is that part which comes between the top of the pedestal and the bottom of the shaft of the column; when there is no pedestal, it is the part between the bottom of the column and the *plinth*; some have included the *plinth* as a part of the *Base*, but it is properly the piece on which the *Base* stands, as the column stands upon that.

The pedestal also has its *Base* as well as the column and the pilaster. The *Base* of columns is differently formed in the different orders, but in general it is composed of certain spires or circles, and was thence in early times called the *spire* of a column. These circles were in this case supposed to represent the folds of a snake as it lies rolled up; but they are properly the representations of several larger and smaller rings or circles of iron, with which the trunks of trees, which were the antient columns, were surrounded, to prevent their bursting: these were rude and irregular, but the sculptor who imitated them in stone, found the way to make them elegant.

The

The Tuscan Base consists only of a single torus, or round member upon the plinth; this is the most simple of all. The Doric Base has a torus and an inverted cima in the coliseum; the Ionic Base has a single large torus, which is placed over two slender scotias, that are separated by two astragals. The Corinthian Base has two torus's, two scotias, or hollow members, and two astragals. And the Composite has a double astragal in the middle. These several terms will be explained in their places. We have observed, that the Doric had antiently no Base; Vitruvius allows none, and other antique buildings beside the Parthenian of Athens might be produced as instances. Even the Ionic in some very antient pieces has no Base; so that we see what is done in this matter is arbitrary, and has been introduced of later time than the period of many buildings of which we have remains; but this must not be considered as an improper deviation from the most antient manner, but as an improvement upon it; for the Base is a very natural and very beautiful part of every order. We have named the Base appropriated by writers to each order, but there is besides these five, another called the Attic, or the Atticurgick Base, which excels them all in beauty; and was first given to the Doric, and since to almost every other column. This Base consists of two torus's and a scotia; the two torus's are of different dimensions, and the scotia runs between them. The Ionic Base is unnatural, because it is smaller below than higher up, neither is that of the Corinthian without its faults: both are greatly inferior to the Attic, which is therefore often with great judgment substituted in their place.

The antients seem to have given the same, or nearly the same projecture to the Base, in all the orders where we find it in their works. For instance, we see the same projecture in the Base of the Doric and Corinthian order in the Coliseum, and in that of the Ionic in the temple of Concord; and the difference between the greatest projecture of any antique Base we know, which is in the arch of Titus, and the least, which is in the Corinthian order in the Coliseum, is very trifling.

BASIL, among joiners, &c. the angle to which the edge of an iron tool is ground. To work any soft wood, they usually make their Basil twelve degrees, and for hard, eighteen degrees; it having been observed, the more acute or thin the Basil is, the better and smoother it cuts; and the more obtuse, the stronger and fitter for service.

BASILIC, an ancient palace. These were vast buildings, consisting of a great hall, with isles, porticos, tribunals, and tribunals, where the sovereigns in person administered justice. This is the proper and strict sense of the word, according to the Greek; but the architects have taken the liberty to extend its meaning farther, and Basilic is now used as a name of any spacious building, a hall, church, or the like. Westminster hall is properly in this sense a Basilic; but the antients were more strict in the

the use of the word, and would not have called any thing but a royal palace by that name. Any large building for a court of justice, and exchange, or the like, is now also called a Basilic. When Basilic is used as the term for a church, it always means a large and elegant one.

BASON, a reservoir or reservatory of water, as the Bason of a jet d'eau, or fountain, the Bason of a port, bath, &c. which Vitruvius calls Labrum.

BASSO-RELIEVO, or **BASS RELIEF**, a piece of sculpture, wherein the figures do not project far, or stand out from the ground in their full proportion. Some authors have distinguished three kinds of Basso-Relievo. In the first, the front figures appear almost with the full Relievo; in the second, they project above one half; and in the third considerably less, as in vases, coins, &c.

BASTION, in fortification, a large mass of earth, usually faced with sods, sometimes with brick or stone, standing out from a rampart, of which it is a principal part.

A Bastion consists of two faces and two flanks; the faces include the angle of the Bastion, and their union forms the outmost, or salient angle, called also the angle of the Bastion; and the union of the two faces to the two flanks, makes the side angles, called also the shoulders or epaules; and the union of two other ends of the flanks to the two curtains, makes the angles of the flanks.

The great rule in constructing a Bastion is, that every part of it may be seen and defended from some other part: mere angles therefore are not sufficient; but flanks and faces are necessary. The faces must not be less than twenty-four Rhineland perches, nor more than thirty. The flanks of a Bastion, provided they stand at the same angle under the line of defence, are so much the better the longer they are; they must therefore stand at right angles with the line of defence. At the same time the disposition of the flanks make the principal part of fortification, as on them the defence chiefly depends; and it is this that has introduced the various kinds of fortifying. The angle of the Bastion must exceed sixty degrees, otherwise it will be too small to give room for guns, and will either render the line of defence too long, or the flanks too short. It must therefore be either a right angle, or some intermediate one between that and sixty degrees.

SOLID BASTION, that which has the void space filled up entirely, and raised to an equal height with the rampart.

VOID or HOLLOW BASTION, that which is only surrounded with a rampart and parapet, having the space within void or empty.

FLAT BASTION, a bastion built in the middle of the curtain, when it is too long to be defended by the Bastions at its extremities.

CUT BASTION, that whose point is cut off instead of which it has a re-entering angle, or an angle inwards, with two points outwards; and

is used, either when the angle would, without such a contrivance, be too acute, or when water, or some other impediment, prevents the Bastion from being carried to its full extent.

COMPOSED BASTION; when two sides of the interior polygon are very unequal, which also renders the gorges unequal.

DEFORMED BASTION, when the irregularity of the lines and angles causes the Bastion to appear deformed or out of shape.

DEMI-BASTION, is composed of one face only, has but one flank, and a demi-gorge.

DOUBLE-BASTION, that which is raised on the plane of another Bastion.

REGULAR BASTION, that which has its true proportion of faces, flanks and gorges.

BASTION or BATON, in architecture, a kind of moulding in the base of a column, called also a tore.

BATEMENT, in carpentry, a term signifying an abatement or waste of a piece of stuff, by forming it to a particular purpose or use.

BATTEN, a name given by workmen to a scantling of wooden stuff, from two to four inches broad, and about one thick; the length is pretty considerable but undetermined. This term is principally used in speaking of doors and windows of shops, &c. which are not framed with whole deal, or one-quarter inch oak, with stiles, rails and pannels, as wainscot is framed; and yet they are made to appear as if they were, by means of these pieces or Battens, bradded on upon the plain boards, which are joined together for the door, or window, all round, and sometimes cross them, and up and down, &c. according to the number of the pannels, the workman intends the door or window shall appear to have.

These pieces are thus bradded on, to represent stiles, rails, and mountains, and are of different breadths, according to the design of the workman, from two to seven inches; there is also generally some moulding struck, as a bead and ogee, or the like, on one edge of those that represent the stiles, and the upper and lower rails, and on both the edges of those which are intended to appear like montans and middle rails.

BATTEN-DOORS, those which resemble wainscot doors, but are not so; for in wainscot doors the pannels are grooved into the framing; but in these they first joint and glue the boards, which are cut to the full length and breadth of the door-case; and when the glue is dry they traverse them over with a long plane; and, being smoothed, the battens are fitted on, on the front-side. These are called single Batten Doors, there being others which are called double Batten Doors, viz. such as are battened on both, which is very seldom done.

There are also Battened Doors, which are called double doors, such as front or outer doors, which are usually made of whole deal, and afterwards battened on the outside, and pieces four or five inches broad mitred round

round the edges on the inside of the door ; and then it is lined cross the door between these pieces, with thin slit deal, which makes it level with the mitred pieces.

Some doors have been lined with pieces laid leveling, and not at right angles, but near mitre to the sides of the door ; and when all has been planed off level, it has been divided into rhombus's, which was an additional beauty to the work.

This method of lining upon the doors, viz. pointing from the lower corner behind, towards the upper corner before, appears to be a good method to prevent a Door from sinking at the fore-corner, if the joints should happen to become unglued.

BATTER, a term used by carpenters, bricklayers, &c. to signify that a piece of timber, a wall, &c. does not stand upright, but leans from us when we stand before; but when it leans towards us, we say it overhangs, or hangs over.

BATTLEMENTS, indentures or notches in the top of a wall, or other building, in the form of embrasures.

BAY-WINDOW, a window composed of an arch of a circle ; and consequently will stand without the streſs of the building. From such a Window, spectators may better observe what is passing in the road, street, &c.

BEAD, in architecture, a round moulding, generally made upon the edge of a piece of stuff, in the Corinthian and Composite orders, cut or carved in short embossments, like Beads in necklaces, in semi-relief ; a Bead is usually one quarter of a circle, and only differs in size from a bouldin ; for when they are large they are generally called bouldins. Sometimes a Bead-plain is set on the edge of each fascia of an architrave, and sometimes also an astragal is thus carved. In both which these carvings are called Beads.

A Bead is frequently placed on the lining-board of a door-case, and on the upper edges of skirting-boards.

BEAK, in architecture, a little fillet, left on the edge of a larmier, which forms a canal, and makes a kind of pendant.

Chin **BEAK**, a moulding, the same as the quarter-round, except that its situation is inverted. This is common in modern, but not in ancient buildings.

BEAM, in architecture, the largest piece of wood in a building, which always lies cross the building or the walls, serving to support the principal rafters of the roof, and into which the feet of the principal rafters are framed.

No building has less than two of these Beams, viz. one at each head. Into these the girders of the garret-floor are also framed ; and if the building be of timber, the teazle tenons of the posts are framed. The teazle-tenons are made at right angles to those which are made on the posts to

go into the raifons; and the relifh or cheats of thefe teazle-tenons, ftand up within an inch and an half of the top of the raifon, and the Beam is cauked down (which is the fame thing as dove-tailing acrofs, till the cheeks of the mortifes in the Beam conjoin with thofe of the teazle-tenons on the pofts.

As to the fize of Beams. The proportions of Beams in or near London, are fixed by a ftatute or act of parliament.

Sir Henry Wotton advifes, that all Beams, fummers, and girders, be made of the ftrongeft and moft durable timber. Herrera informs us, that in Ferdinand Cortez's palace in Mexico, there were feven thoufand Beams of cedar; but then he muft be underftood to ufe the word Beam in a greater latitude than it is ufed with us. The French, under the word Poutre, which fignifies a Beam, take in not only the pieces which bear the rafters, but alfo all thofe which fustain the joifts for the cielings. Some French authors have confidered the force of Beams, and brought their refiftance to a precise calculation; as particularly, M. Varignon and M. Parent; the fystem of the latter of which is as follows.

When two plans of fibres, which were contiguous before, are feparated in a Beam, which breaks parallel to its bafe, (which is fupposed to be a parallelogram) there is nothing to be confidered in thefe fibres, but their number, largenefs and tenfion, before they are broken, and the lever, by which they act; all thefe together making the refiftance of the Beam remaining to be broke. Then fuppose another Beam of the fame wood, where the bafe is likewise a parallelogram, and of any bignefs, with regard to the other, at pleasure. The height of each of thefe, when laid horizontal, being divided into an indefinite number of equal parts, and their breadth into the fame number, in each of their bafes will be found an equal number of fmall quadrangular cells, proportional to the bafes of which they are parts; then thefe will represent little bafes; or, which is the fame thing, the thicknefses of the fibres to be feparated for the fracture of each Beam, and the number of cells being equal in each Beam, the ratio of the Bafes of both beams will be that of the refiftance of their fibres, both as to number and thicknefs. Now the two Beams being fupposed to be of the fame wood, the fibres moft remote from the points of fupport, which are thofe which break the firft, muft be equally ftretched when they break.

It is evident, that the levers, by which the fibres of the two Beams act, are represented by the height of their bafes; and confequently the whole refiftance of each Beam is the product of its bafe by its height; or, which is the fame thing, the fquare of the height being multiplied by the breadth, which holds not only of parallelogrammick, but alfo of elliptical bafes. Hence, if the bafis of two Beams are equal, though both their heights are unequal, their refiftance will be as their heights alone; and confequently

quently one and the same Beam laid on the smallest side of its base, will resist more than when laid flat, in proportion as the first situation gives it a greater height than the second. And thus an elliptical base will resist more, when laid on its greatest axis, than on its smallest. Since in Beams equal in length, it is the bases which determine the proportion of their weights or solidities; and since their bases being equal, their heights may be different, two Beams of the same weight may have resistance different to infinity. Thus, if in the one the height of the base be conceived infinitely great, and the breadth infinitely small; while, in the other, the dimensions of the base are finite, the resistance of the first will be infinitely greater than that of the second, though their solidity and weight be the same. If therefore, all required in architecture were to have Beams capable of supporting vast loads, and at the same time have the least weights possible, it is plain they must be cut as thin as laths, and laid edge-wise.

If the bases of the two Beams are supposed to be unequal, but the sum of the sides of the two bases equal. If they be either 12 and 12, or 11 and 13, or 10 and 14, &c. so that they always make 24; and further, if they are supposed to be laid edge-wise, pursuing the series, it will appear, that in the Beam of 12 and 12, the resistance will be 1728, and the solidity or weight 144, or that in the last, or 1 and 23, the resistance will be 529, and the weight 23: therefore the first, which is square, will half the strength of the last with regard to its weight. Hence M. Parent remarks, that the common practice of cutting the Beams out of trees as square as possible, is an imprudent method; and thence he takes occasion to determine geometrically, what dimensions the base of a Beam to be cut out of any tree proposed should have, in order to its having the greatest resistance possible; or, which is the same thing, a circular base being given, he determines the rectangle of the greatest resistance that can be inscribed, and finds that the sides must be nearly as 7 to 5, which agrees with observation.

We have hitherto supposed the length of the Beams to be equal; if it be unequal, the bases will resist so much the less, as the Beams are the longer. To this may be added, that a Beam sustained at each end, breaking by a weight suspended from its middle, does not only break at the middle, but at each extreme; or if it does not actually break there, at least immediately before the moment of the fracture, which is that of the equilibrium between the resistance and the weight, its fibres are as much stretched at the extremes, as in the middle; so that of the weight sustained by the middle, there is but one-third part that acts at the middle to make the fracture; the other two only acting to induce a fracture in the two extremes.

A Beam may be supposed to be either loaden only with its own weight, or with other foreign weights, applied at any distance, or only with those

foreign weights. Since, according to M. Parent, the weight of a Beam is not in common above one-seventieth part of a load given to sustain it, it is evident, that in considering several weights, they must be all reduced by the common rules, to one common centre of gravity. M. Parent has also calculated tables of the weights, which will be sustained by the middle in Beams of various bases and lengths, fitted at each end, into walls, on a supposition, that a piece of oak of an inch square, and a foot long, retained horizontally by the two extremes, will sustain three hundred and fifteen pounds in its middle, before it breaks; which has been found by experiments that it will,

BEAM-Compasses, an instrument made either of wood or brass, with sliding sockets or cursors, which serve to carry several shifting points for drawing and dividing circles with very long radii; they are of use in large projections, for drawing the furnitures on wall-dials, &c.

BEAM-FILLING, is plaisterers work, and is the filling up the vacant space between the rafter and roof, whether tiling, thatching, or any other roof, with stones or bricks laid between the rafters on the rafter, and plaistered on with loam, frequent where the garrets are not pargeted or plaistered; or sometimes they set some tiles with one edge upon the rafter; and the other leaning against the roof; and then these tiles are plaistered over with loam. This sort of work is very common in the country, where they do not parget or plaister their garrets.

BEARER, in architecture, a post, pier, or wall, erected between the two ends of a piece of timber, to shorten its bearing, or to prevent its whole weight resting on the two ends only.

By an act of parliament of the 14th year of the reign of George the Third, it is enacted, that "no bearer to wood stairs, where an old party wall has been cut into for that purpose, must be laid nearer than eight inches and an half to any chimney or flue whatever, or nearer than four inches to the internal finishing of the building adjoining." But this act extends only to the bills of mortality, the parishes of St. Mary-le-Bow, Paddington, St. Pancras, and St. Luke at Chelsea, in the county of Middlesex. There are several other particulars in the above mentioned act respecting carpenters, which we shall introduce at large under the article *CARPENTER*.

BEARING of a piece of timber, among carpenters, the space either between the two fixed extremes thereof, when it has no other support, which they call Bearing at length; or between one extreme, and a post, brick-wall, &c. trimmed up between the ends, to shorten its Bearing.

BED OF STONE, in masonry, a course or range of stones; and the joint of the Bed is the mortar between two stones, placed over each other.

BED MOULDING, a term used to signify those members in a cornice which are placed below the coronet: and now, a Bed-Moulding, with joiners,

joiners; usually consists of these four members, an ogee, a list, a large bouldin, and another list under the coronet.

BEVEL OR BEVIL, in masonry and joinery, a kind of square, one leg of which is frequently crooked, according to the sweep of an arch or vault. It is moveable on a point or centre, and so may be set to any angle. The make and use of it are nearly the same as those of the common square and mitre, except that these are fixed; the first at an angle of ninety degrees, and the second at forty-five: whereas the Bevel being moveable, it may in some measure supply the office of both, and yet supply the deficiency of both, which it is chiefly intended for, serving to set off or transfer angles, either greater or less than ninety or forty-five degrees. Hence, any angle that is not square, is called a Bevel-angle, whether it be more obtuse, or more acute than a right-angle: but if it be one half as much as a right-angle, viz. forty-five degrees, then workmen call it a mitre; they have also a term half-mitre, which is an angle that is one quarter of a quadrant or square, viz. an angle of twenty-two degrees and a half, they call a half-mitre.

BINDING-JOISTS, those Joists in any floor, into which the trimmers of stair-cases (or well-holes for the stairs) and chimney-ways are framed. These Joists ought to be stronger than common Joists. As to the scantling and size of these, as well as all other timber members, they are settled by act of parliament.

BLOCK of Marble, a piece of Marble, as it comes out of the quarry, before it has assumed any form from the hand of a workman.

BOARD-MEASURE, to measure a Board, is nothing more than the measuring a long square.

E X A M P L E.

If a Board be sixteen inches broad, and thirteen feet long, how many feet are contained therein?

Multiply sixteen by thirteen, and the product will be two hundred and eight; which being divided by twelve, gives seventeen feet; and four remaining, which is a third part of a foot; thus,

$$\begin{array}{r}
 12. \quad 13. \quad 16. \\
 \quad \quad \quad 13 \\
 \quad \quad \quad \text{---} \\
 \quad \quad \quad 48 \\
 \quad \quad 16 \\
 \quad \quad \text{---} \\
 12)208(17\frac{1}{3} \\
 \quad 12 \\
 \quad \text{---} \\
 \quad 88 \\
 \quad 84 \\
 \quad \text{---} \\
 \quad 4
 \end{array}$$

Or

Or you may multiply one hundred and fifty-six (the length in inches) by sixteen, and the product will be two thousand four hundred and ninety-six; which being divided by one hundred and forty-four (the number of inches in a foot square) the quotient will be seventeen feet, and forty-eight remaining, which is a third part of one hundred and forty-four; as before, thus;

$$\begin{array}{r}
 144: \quad 156. \quad 16 \\
 \quad \quad 16 \\
 \hline
 \quad \quad 936 \\
 \quad \quad 156 \\
 \hline
 144(2496(17\frac{48}{144} \\
 \quad \quad 144 \\
 \hline
 \quad \quad 1056 \\
 \quad \quad 1008 \\
 \hline
 \quad \quad 48
 \end{array}$$

By Scale and Compasses.

Extend the compasses from twelve to thirteen; the same extent will reach from sixteen to seventeen feet and one-third, the content. Or, extend them from one hundred forty-four to one hundred fifty-six (the length in inches) and the same extent will reach from sixteen to seventeen feet one-third, the content.

EXAMPLE II.

If a Board be nineteen inches broad, how many inches in length will make a foot?

Divide one hundred and forty-four by nineteen, and the quotient will be very near seven; and so many in length, if a Board be nineteen inches broad, will make a foot.

Inc.	Inc.	Inc.	Inc.	
19:	144:	1:	7:	$\frac{11}{19}$ or 58 fere.
	133			
	<hr/>			
	11			

Again; extend the compasses from nineteen to one hundred forty-four; that extent will reach from one to seven, fifty-eight, that is, seven inches

inches and somewhat more than a half; so that if a board be nineteen inches broad, if you take seven inches, and a little more than a half in your compasses, from a scale of inches, and run that extent along the board from end to end, you may find how many feet that board contains, or you may cut off from that board any number of feet desired. For this purpose there is a line upon most ordinary joint-rules, with a little table placed upon the end, of all such numbers as exceed the length of the rule, as in this little table annexed.

0	0	0	0	5	0	8	6
12	6	4	3	2	2	1½	1
1	2	3	4	5	6	7	8

Here you see if the breadth be one inch, the length must be twelve feet; if two inches, the length is six feet; if five inches broad, the length is two feet five inches, &c. The rest of the lengths are expressed in the line thus: if the breadth be nine inches, you will find it again sixteen inches, counted from the other end of the rule; if the breadth be eleven inches, then a little above thirteen inches will be the length of a foot, &c.

BODY, in Geometry, is that which has three dimensions, length, breadth, and thickness. As a line is formed by the motion of a point, and a superficies by the motion of a line, so a Body is general by the motion of a superficies.

To bear a BODY, with painters. A colour is said to bear a Body, when it is of such a nature, as is capable of being ground so fine, and mixing so entirely with oil, as to seem only a very thick oil of the same colour; and of this nature are white lead and ceruse, lamp-black, vermilion, lake pink, yellow-oker, verdigrease, indigo, umber, and Spanish-brown; blue-bice and red-lead are not quite so fine; but yet they may be said to bear a very good Body. All these may be ground so fine, as to be even like oil itself; and then they also may be said to work well, spreading so smooth, and covering the Body of what you lay upon it so entirely, as that no part will remain visible where the pencil has gone, if the colour be worked stiff enough. But, on the contrary, verditers and finalts, with all the grinding imaginable, will never be well imbodyed with the oil, nor work well; bice and red-lead indeed will hardly grind to an oily firmness, nor lie entirely smooth in the working; yet it may be said to bear a tolerable Body, because they will cover such work as they are laid upon very well; but such colours as are said not to bear a Body, will readily part with the oil, when laid on the work; so that when the colour shall be laid on a piece of work, there will be a separation, the colour in some parts, and the clear oil in others, except they are tempered extremely thick.

BOLTS OF IRON, for house buildings are distinguished by ironmongers into three kinds, viz. plate, round, and spring Bolts; plate and spring Bolts are used for the fastening of doors and windows, and these are of different sizes and prices. There are also brass-knobbed Bolts, short and long.

BOND, a term among workmen; as make good Bond, signifies that they should fasten two or more pieces together, either by tenanting, mortising, or dove-tailing, &c.

BOSSAGE, in architecture, a term used for any stone that has a projection, and is laid in a place in a building lineal, to be afterwards carved into mouldings, capitals, coats of arms, &c.

Bossage is also that which is otherwise called rustic work; consisting of stones which seem to advance beyond the naked of a building, by reason of indentures or channels left in the joinings; these are chiefly used in the corners of edifices, and thence called rustic quoins. The cavities or indentures are sometimes round, and sometimes frame chained or levelled; sometimes in a diamond form, and sometimes inclosed with a cavetto, and sometimes with a listel.

BOULTINE, a term used by workmen for a moulding, whose convexity is just one-fourth of a circle; being the member next below the plinth in the Tuscan and Doric capital.

BOUTANT, or **ARCH-BOUTANT**, in architecture, a flat arch, or part of an arch, abutting against the reigns of a vault, to prevent its giving way.

A pillar **BOUTANT**, a large chain or pile of stone, made to support a wall, terrace, or vault.

BRACE, in building, a piece of timber framed in with bevel joints; the use of which is to keep the building from twerving either way. When the Brace is framed into the king-pieces, or principal rafters, it is sometimes called a strut.

BRADS, among artificers, a sort of nails used in building, which have no spreading heads. They are distinguished by ironmongers, by six names, as joiners-Brads, flooring-Brads, batten-Brads, bill-Brads, or quarter-heads, &c. Joiners-Brads are used for hard wainscot, batten-Brads for soft wainscot; or bill-Brads are used when a floor is laid in haste, or for shallow joists subject to warp.

BRANCHES, of ogives, in architecture; the arches of Gothic vaults. These arches traversing from one angle to another diagonally, form a cross between the other arches, which make the sides of the square, of which the arches are diagonals.

BRAZING, the soldering or joining two pieces of iron together, by means of thin plates of brass melted between the two pieces to be joined. If the work is very fine, as when the two leaves of broken saws are to be joined

joined, it is covered with beaten borax, moistened with water, that it may be incorporated with the brass dust, which is here added; and the piece is exposed to the fire without touching the coals, till the brass is observed to run. Lastly, to braze with a still greater degree of delicacy, they use a solder made of brass, with a tenth part of tin; or another one third of brass, and two-thirds of silver; or borax and rosin; observing, in all these methods of Brazing, that the pieces be joined close throughout; as the solder holds only in those places that touch.

To BREAK IN, in architecture, a term used by carpenters, when they cut or rather break a hole in brick walls with a ripping chizzel.

BREST, a term in architecture, used, by some, to signify the same member in a column, that others call a *thorus*.

BREAST-SUMMERS, in timber buildings, such pieces in the outward parts of a building, into which the girders are framed in all the floors but the ground-floor, then they call it a cell; and garret floor, then it is called a beam. As to their size and square, it is the same according to the act of parliament, with that of girders; it is here to be observed, that it is not here meant, all the pieces which have girders in them, (and are not in the garret, or ground floor;) but all such as are in the exterior part of the building; whether in the front, flanks, or exterior part of the building; for the pieces in the internal part of the building, into which girders are framed, are called *Summers*.

BREW-HOUSE, a building adapted to the brewing, &c. of malt liquors.

In erecting a large and public Brew-house to the best advantage, several circumstances should be carefully observed. 1. That three sides in four of the upper part, or second floor, be built with wooden battens about three inches broad, and two thick, that a sufficient quantity of air may be admitted to the backs or coolers. 2. That the coppers be erected of a proper height above the mashing stage, that the hot water may be conveyed by means of cocks into the mash tuns, and the worts into the coolers. 3. That the fire-places of the coppers be very near each other, that one stoker, or person who looks after the fire, may attend all. 4. That the yard for coals be as near as possible to the fire-places of the copper. 5. That the malt be ground near the mash tuns, and the mill erected high enough that the malt may be conveyed from the mill immediately to the mash-tuns, by means of a square wooden spout or gutter. 6. That the upper backs be not erected above thirty-three feet above the reservoir of water, that being the greatest height water can be raised by means of a common single pump. 7. That the pumps which raise the water, or liquor, as the brewers call it, out of the reservoir into the water-backs, and also those which raise the worts out of the jack-back into the coppers, be placed so that they may be worked by the horse-mill which grinds the malt.

BRICKS,

BRICKS, as they supply the place of stone in our common buildings, and are composed of an earthy matter hardened by art, to the resemblance of that kind, may be very well considered as an artificial stone. Bricks are of a very ancient standing, as appears from sacred history, the tower of Babel being built with them; and it is said, the remains are still visible. In the times of the first kings of Rome, they built with massive square stones, which they learned from the Tuscans. Towards the latter end of the republic they began to use Brick, having borrowed the practice from the Greeks. And the greatest, as well as most durable edifices, of the succeeding emperors, as the pantheon, &c. were built with Brick.

In the time of Gallienus, the buildings were composed alternately, of an order of Brick, and an order of toftus, a kind of soft gritty stone. After his time, they laid aside the use of Bricks and resumed flints. In the east they baked their Bricks in the sun. The Romans used them unburnt, having first left them to dry in the air, for three, four, or five years.

Of the matter whereof Bricks are made. Pliny says, if you would have good Bricks, they must not be made of any earth that is full of sand or gravel, nor of such as is gritty or stony, but of a greyish marl, or whitish chalkey clay, or at least of reddish earth. But if there is a necessity to use that which is sandy, choice should be made of that which is tough and strong. He also adds, that the best season for making Bricks is the spring; because they will be subject to crack and be full of chinks, if made in the summer. He directs, that the loam of which Bricks are made, be well steeped or soaked, and wrought with water.

Bricks are made of a clayey or a loamy earth, pure, or with various mixtures; they are shaped in a mould, and after some drying in the sun or air, are burnt to a hardness. This is our manner of making Bricks; the use of them was very ancient, but whether they were always made in the same manner admits a doubt; we are not clear what was the use of straw in the Bricks for building in Egypt, and there is room to question whether those of many later periods were ever exposed to the fire. There are remains of great Brick buildings of the Romans, in which the Bricks seem never to have been burnt, but to have been hardened by a very long exposure to the sun; and this their own accounts confirm; mention being made in some of their writers of four or five years drying for this purpose. The Greeks built with Bricks, and they used them of six different shapes, or at least so many different sizes; three being the principal, and there being as many exact half sizes; this gave a variety to their appearance.

We are in general tied down by custom to one form and one size, which is truly ridiculous; eight or nine inches in length, and four in
breadth,

breadth, is our general measure; but beyond doubt there might be other forms and other sizes introduced very advantageously. Sir Henry Wotton mentions with commendation a particular form of Brick from Daniel Barbaro, which is in shape triangular, of equal sides, and each a foot long. The thickness he mentions is an inch and half, so that his may be well enough called a kind of thick tiles, but that may be altered at pleasure. There is no doubt but Bricks of this and other regularly angular forms might be used with advantage in many parts of our common buildings.

It has been proposed by some to steep Bricks in water after the burning, and then burn them over again, in order to give them greater strength; but this may be much better done by a proper choice of the materials, and a thorough skill and sufficient labour in tempering them.

It is an observation of Palladio, that the antients made their Bricks of a larger size, which were intended for great buildings, and this was certainly right and reasonable; but he is aware of the difficulty there must have been in thoroughly and equally baking of such; we are assured, by the very names, that the Greeks had Bricks of five palms long, that being the sense of the name given to the largest sort they used in common buildings.

The manner of burning is a thing very essential in the structure of Brick. It is commonly done in a clamp about *London*; but in some places in a kiln. Some of the finest Bricks are burnt in the kilns erected for tiles.

The degree of burning makes a considerable difference in the condition of the Bricks; but their principal distinction is from the nature of the materials with which they are made; these being not only various in themselves, but made different in a much greater degree by the mixtures given them in the working.

A great variety of Bricks have been contrived by different persons, and made at different times; and long perplexed descriptions have been given of the way of fabricating them; but at present they are in a manner reduced to four sorts, our builders finding these sufficient to answer every purpose. These are place Bricks, grey Stocks, red Stocks, and the finest red or cutting Bricks. Adding to these two or three foreign kinds imported for particular purposes, we have before us all that is used in this way, and it would be needless for us to meddle with any other; our purpose being to write not for the satisfaction of an idle and useless curiosity, but for the service of the practical builder, and of the gentleman who employs him.

As to the materials of Bricks, we have already said they are all made of earth of a clayey or loamy nature; the more pure the earth used is, the harder and firmer the brick will be; but then the less mixture there is

with it, the more labour it will require in working. The Brick-makers regulate themselves according to this rule, and finish their work according to the service for which it is intended.

Grey Stocks are made of a good earth well wrought, and with little mixture.

Place Bricks are made of the same earth, or worse; with a mixture of dirt from the streets; and these are often so very bad they will hardly hold together. This is the principal difference between the two kinds of common Bricks, as to their substance; the grey Stocks being sound and firm, because the earth of which they are made is purer, and the *Place Bricks* being poor and brittle, because of the mixture of other matter with that earth and less working.

Red Stocks and the *Red Bricks*, called also from their use, cutting Bricks, owe their colour to the nature of the clay of which they are made; this is always used tolerably pure, and the Bricks of the better kind are called by some clay Bricks, because they are supposed to be made of nothing else.

We do not pretend here to enter into the niceties of the Brick-maker's business, every profession has its secrets, which are kept among those who follow it; neither is it our business to instruct the reader in making of Bricks, but in using them in building.

Thus much it was necessary to say, that he might understand the nature of these as well as that of the other materials wherewith he is to work; and this is the general account of them. The grey Stock, he sees, are made of a purer earth, and better wrought, and they are used in front in building, being the strongest and handsomest of this kind; the *place Bricks* are made of the clay, with a mixture of dirt and other coarse materials, and are more carelessly put out of hand; they are therefore weaker and more brittle, and are used out of sight, and where little stress is laid upon them; the red Bricks of both kinds are made of a particular earth well wrought, and little injured by mixtures, and they are used in fine work, in ornaments over windows, and in paving. These are frequently cut or ground down to a perfect evenness, and set in putty instead of mortar; and on many occasions they make a very beautiful appearance in this manner.

These are the three kinds of bricks commonly used by us in building, and their difference is owing to this variety in the materials. The *place Bricks* and grey Stocks are made in the neighbourhood of London, wherever there is a Brick work; the two kinds of red Bricks, depending upon a particular kind of earth, can only be made where that is to be had; they are furnished from several places within fifteen or twenty miles of London.

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We have already observed, that there were two or three other kinds of Bricks to be named which are imported from other countries ; and there is also one of the red or cutting Brick sort that is of our own manufacture, and for its excellence deserves to be particularly mentioned ; this is the Hedgerly Brick ; it is made at a village of that name of the famous earth called Hedgerly loam, well known to the glass-makers and chemists. The loam is of a yellowish colour, and very harsh to the touch, containing a great quantity of sand ; its particular excellence is, that it will bear the greatest violence of fire without hurt ; the chemists coat and lute their furnaces with this, and the ovens at glass-houses are also repaired or lined with it, where it stands all the fury of their heat without damage. It is brought into London for this purpose, under the name of Windsor loam, the village being near Windsor, and is sold at a large price ; the Bricks made of this are of the finest red that can be imagined, they also call them fire Bricks, because of their enduring the fire ; and they are used about furnaces and ovens in the same way as the earth.

The foreign Bricks that are to be named are the Dutch and Flemish Bricks and clinkers ; these are all nearly of a kind, and are often confounded together ; they are very hard, and of a dirty brimstone colour ; some of them not much unlike our grey Stocks, others yellower. The Dutch are generally the best baked, and the Flemish the yellowest. As to the clinkers, they are the most baked of all, and are generally warped by the heat. They are used on particular occasions, the Dutch and Flemish for paving yards, and stables, and the like ; and the clinkers, which come also from the same places, in ovens.

The reader, who has thus far acquainted himself with the nature and qualities of the several kinds of Bricks, their different strength, colours and beauty, will easily enter into the distinctions that are made in the use of them. As to their nature it is proportioned to their several degrees of goodness. The fine red-cutting Bricks are twice, or more than twice, the price of the best grey Stocks ; the red stocks half as dear again as the grey ; and the place Bricks, as they are a great deal worse, so they are much cheaper than any of the others.

The grey Stocks, and place Bricks, are employed in the better and worse kinds of plain work ; the red Stocks, as well as the grey, are used sometimes in this business, and sometimes for arches, and other more ornamental pieces : the fine red cutting bricks are used for ruled and gaged work, and sometimes for paving ; but the red stones are more frequently employed when a red kind is required for this purpose.

The red cutting brick, or fine red, is the finest of all bricks. In some places they are not at all acquainted with this ; in others they confound it with red Stock, and use that for it, though, where the fine red Brick

is to be had pure and perfectly made, the difference is five to three in the sale price between that and the red Stock.

The red and grey Stock are frequently put in arches gauged, and one as well as the other set in putty instead of mortar; this is an expensive work, but it answers in beauty for the regularity of the disposition and fineness of the joints, and has a very pleasing effect.

The fine red Brick is used in arches ruled and set in putty in the same manner; and, as it is much more beautiful, is somewhat more costly. This kind is also the most beautiful of all in cornices, ruled in the same manner and set in putty.

The grey Stocks of an inferior kind are used in bricking walls.

The place Bricks are used in paving dry, or laid in mortar, and they are put down flat or edgewise. If they are laid flat, thirty-two of them pave a square yard; but if they are placed edgewise, it takes twice that number: in the front work of walls the place Bricks should never be admitted, even in the meanest building. That consideration therefore only takes place in the other kinds; and the fine cutting Bricks come so very dear this way, that few people will be brought to think of them; so that it lies in a great measure between the grey Stocks and red Stocks. Of these the grey are most used; and this not only because they are cheaper; but in most cases where judgment is preferred to fancy they will have the preference.

We see many very beautiful pieces of workmanship in red Brick; and to name one, the front of the green-house in Kensington gardens will be sure to attract every eye that has the least curiosity; but this should not tempt the judicious architect to admit them in the front walls of the buildings. In the first place, the colour itself is fiery and disagreeable to the eye; it is troublesome to look upon it; and, in summer, it has an appearance of heat that is very disagreeable; for this reason it is most improper in the country, though the oftenest used there from the difficulty of getting grey. But a farther consideration is, that in the fronts of most buildings of any expence, there is more or less stone-work; now it were to be wished, that there should be as much conformity as could be had between the general nakedness of the wall and these several ornaments which project from it; the nearer they are of a colour the better they always range together; and if we cast our eyes upon two houses, the one red, and the other grey Brick, where there is a little stone-work, we shall not be a moment in doubt which to prefer. There is something harsh in the transition from the red Brick to stone, and it seems altogether unnatural; in the other, the grey stocks come so near the colour of stone that the change is less violent, and they sort better together. For this reason also the grey Stocks are to be judged best coloured when they have least of the yellow cast; for the nearer they come to the colour of
stone,

stone, when they are to be used together with it, it is certainly the better. Where there is no stone work there generally is wood, and this being painted white, as is commonly the practice, has yet a greater effect with red brick than the stone work; the transition is more sudden in this than the other; but, on the other hand, in the mixture of grey Bricks and white paint, the colour of the Brick being soft, there is no violent change.

The grey Stocks are made at this time to a great excellence about London, as many new pieces of Brick work shew to the credit of the undertakers. The duke of Norfolk was so nice in this respect, that he had the Bricks brought from his estate in that county for the building the front of his house in St. James's Square; but the event shews, that his Grace might have been better supplied near at hand, as to colour, with equal hardness.

The greatest advantage that a grey Stock, which is the standard Brick, can have, is in its sound body and pale colour; the nearer it comes to stone the better; so that the principal thing the Brick-maker ought to have in view, for the improvement of his profession, is the seeking for earth that will burn pale, and that will have a good body, and to see it has sufficient working. The judicious architect will always examine his Bricks in this light, and will be ready to pay a price where it is merited by the goodness of the commodity.

The utility and common practice of building all our edifices of Brick, both in London and the country, arises from motives too obvious to need a definition, since it is generally considered to be much the cheapest, as well as the most eligible substance that can be invented for the purpose, both in point of beauty and duration, and inferior to nothing but wrought stone.

The great principle in the practice of Brick-work lays in the proclivity, or certain motion of absolute gravity, caused by a quantity or multiplicity of substance being added or fixed in resistable matter; therefore naturally tends downwards, according to the weight and power impressed. From which observations the requisite inferences may be drawn, and such remarks made, as may enable the journeyman to erect his works with such accuracy, that no bad consequences may attend, and, moreover, avoid unnatural settlements.

And first it may not be amiss to consider the motive of this above-mentioned proclivity, which is chiefly caused through the yielding mixture of the matter of which mortar is composed, and cannot well be reduced to any system of certainty; because the absolute weight of a Brick, or any other substance laid in mortar, will naturally decline according to the substance or quality of it; in which case particular care should be taken, that it is of a regular quality all the way through the building;

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and likewise that the same force should be used to one Brick as another ; I mean the stroke of the trowel ; a thing, or point in practice, of much more consequence than is generally imagined ; for if a Brick be actuated upon by a blow, it will be a much greater pressure upon it than the absolute weight of twenty Bricks : before which can be properly laid, in form and arrangement, with the advantage of the weather in a favourable season, may be so dried or consolidated, that no settlement can ensue from other defects than that of an oversight in the foundation. The many bad effects that arise from mortar not being of a proper quality, should make masters very cautious in the preparation of it, as well as the certain quantity of materials of which it is composed, that the whole structure may be of one substance.

There is one thing which often causes a bulging in large flank-walls, especially when they are not properly set off on both sides ; that is, the irregular method of laying Bricks too high on the front edge ; that, and building the walls too high on one side, without continuing the other, often causes the above defects. Notwithstanding, of the two evils, this is the least ; and Bricks should incline rather to the middle of the wall, that one half of the wall may be a shore to the other. But this method, too much followed, will be more hurtful than beneficial, because the full width of the wall doth not take its absolute weight, and entirely removes the specific gravity from its first line of direction, which in all walls should be perpendicular and united ; whereas, if the above method is stretched to excess, and the walls have a super-incumbent weight to bear adequate to their full strength, a disjunctive digression is made from the right line of direction ; the conjunctive strength becomes divided ; and instead of a whole or united support from the wall, its strength is separated in the middle, and takes two lateral bearings of gravity ; each insufficient for the purpose ; therefore like a man overloaded either upon his head or shoulders, naturally bends and stoops to the force impressed ; in which mutable state the above grievances usually happen.

Another great defect we frequently see in the fronts of houses ; in some of the principal ornaments of Brick-work, viz. arches over windows, &c. and which is too often caused by a want of experience in the rubbing of them ; which is the most difficult part of the branch, and ought to be very well considered. The faults I mean, are the bulging or convex situation we often see arches in, after the houses are finished, and sometimes loose in the key or center bond. The first of these defects, which appears to be caused by too much weight, is in reality no more than a fault in the practice of rubbing the Bricks too much off on the insides ; for it should be a standing maxim (if you expect them to appear straight under their proper weight) to make them the exact gauge on the inside,
that

that they bear upon the front edges ; by which means their geometrical bearings are united, and all tend to one center of gravity.

The latter observation, of camber arches not being skewed enough, is an egregious fault ; because it takes greatly from the beauty of the arch, as well as its significancy. The proper method of skewing all camber arches should be one-third of their height. For instance ; if an arch is nine inches high, it should skew three inches ; one of twelve inches, four ; one of fifteen inches, five ; and so of all the numbers between those. Observe, in dividing the arch, that the quantity consists of an odd number ; by so doing, you will have proper bond ; and the key-bond in the middle of the arches ; in which state it must always be, both for strength and beauty. Likewise observe, that arches are all drawn from one center ; the real point of camber arches is got from the above proportion. First, divide the height of the arch in three parts ; one is the dimensions for the skewing ; a line drawn from that through the point at the bottom to the perpendicular of the middle arch, gives the center ; to which all the rest must be drawn.

There are many other difficult jobs in Brick-work ; as groins, niches, &c. all which shall be treated of in their proper order.

OF BRICK GROINS.

A Groin is the intersecting or meeting of two circles, &c. upon their diagonal elevations drawn upon the different sides of a square, or any other figure, and whose principle of strength lies in the united force of elevation, divided by geometrical proportions to one certain gravity, which is the center to which all the bearings tend. The difficulty that attends the execution of a Brick Groin lies in the peculiar mode of appropriating proper bond at the intersecting of the two circles, as they gradually rise to the crown to an exact point ; in the meeting or intersecting of these angles will be formed a kind of rib in the inside, which should be particularly streight and perpendicular to a diagonal line drawn upon the plan. There is no definition of a thing of this sort, either by lines or description, equal to what will occur to the learner in the practice of them. After the centers are set, let the bricklayer apply two or three Bricks to an angle ; by which means he will effectually see how to cut them as well as the requisites of bond.

There is nothing so certain as practice for the solving any difficulty ; it is by this axiom that every proof is founded, and without it the most flagrant idea of lines, and theoretical speculation, would be in many cases defective ; because a false notion, or a wrong conception, might lead the wisest man into an error. It is upon this principle of practice I propose to render my instructions familiar.

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But to return to the Groins. The workman must observe, that the manner of turning Groins with respect to the sides, is the same as other arches and centers, except in the angles, which must be traced for its properties, as I observed by applying the Bricks; and if the arch is to be rubbed and gauged, you must divide each arch into an exact number of parts, and extend the lines till they meet in the Groin; by which means you will easily find the curve for the angle, from which you must make your templets; observe, in fixing the centers, that the carpenters raise them something higher at the crown, to allow for settling, which frequently happens, sometimes by the pressure upon the butments, otherwise from the length of the crown.

Observe in building of vaults, that the piers or butments are of sufficient strength; all butments to vaults, whether groined, or only arched, should be one-sixth part of the width of the span; and, moreover, if there is any great weight to be sustained, bridgings of timber should be framed, to discharge the weight from the crown of the arch; after a vault or Groin is finished, it is highly necessary to pour on a mixture of terras, or lime and water, on the crown; and give it some little time to dry, before you strike the centers, in order to cement the whole together.

Rough Groins have no more value put upon them than common vaults, which are included at per rod with common Brick-work, except the angles of Groins, which are measured after run lineal, and sometimes allowed by surveyors 1s. per foot; many masters charge 1s. 2d. per foot.

Of a NICH in BRICK-WORK.

A Nich is the inner or concave quarter of a globe, and usually made in walls on the exterior parts of a building, to place figures or statues in. The practice of this in Brick-work is the most difficult part of the profession, on account of the very thin size the Bricks are obliged to be reduced down at the inner circle, as they cannot extend beyond the thickness of one Brick at the crown or top; it being usual, as well as much the neatest method, to make all the courses standing.

The most familiar way to reduce this point to practice, is to draw the front, back, &c. and make a templet of pasteboard, after you have divided the arch for the number of Bricks. My reader must observe, that one templet for the standing courses will answer for the front, and one for the side of the Brick; and at the top of the streight part, from whence the Nich takes its spring, you must remember to make a circle of the diameter of eight or nine inches, and cut this out of pasteboard also, and divide it into the same number of parts as the outward circle; from which you will get the width of your front-templet at the bottom. The reason of this inner circle is to cut off the thin conjunction of points that must all finish in the center, and which in Bricks could never be worked

worked to that nicety; it being impossible to cut Bricks with any accuracy nearer than half an inch thick; within the inner circle the Bricks must be lying. It will be necessary to have one templet made convex, to try the faces of Bricks to, as well as setting of them, when they are gauged. The stone you rub the faces of the Bricks upon, must be cut at one end in the exact form of the Nich, or it will be impossible to face them proper. The level of the flat sides of the Bricks is got by dividing the back into the number of parts with the front, and all struck to the center; from the circle of the front of one Brick set your level, which will answer for the sides of the whole: observe, that the Bricks hold their full gauge at the back, or when you come to set them you will have much trouble. Jobbs of this kind are; and when they happen, should bear a price equal to their value.

The following is what materially concerns the bricklayer, in an act of the 14th of Geo. 3. for the regulation of Brick buildings and party walls, in London, Westminster, St. Mary le Bone, Paddington, Pancras, and St. Luke, at Chelsea.

It will be necessary to observe a few things which respect the Bricklayer, before we immediately enter into the description of the manner he is to execute his work:

1st, That there are only the first, second, third and fourth rates of building, whose thickness of external and party-walls are described in the act.

THE FIRST RATE.

Every church, chapel, meeting-house, and other place of public worship.

Every house or building, for distilling or brewing liquors for sale, for making of soap, for melting of tallow, for dying, for boiling or distilling turpentine, for casting brass or iron, for refining of sugar, for making of glass for chemical works for sale, of what dimension soever the same respectively are built.

And every warehouse and other building (except such buildings as are described to be of the fifth, sixth or seventh rate) not being a dwelling-house, which exceeds three clear stories above ground, exclusive of rooms in the roof, or measures in height 31 feet from the foot-way of either of the fronts, to the top of the blocking course or parapet.

And every dwelling-house with offices belonging and adjoining, or connected otherwise than by a fence or fence-wall, or covered passage open on one or both sides; when finished exceeds the value of 850 l.

And also every dwelling-house which exceeds nine squares of building on the ground plan. Are all and each of them of the first rate.

THE SECOND RATE.

Every warehouse, stable and other building, (except such buildings as are described to be of the first, fifth, sixth or seventh rate) not being a dwelling house which exceeds two clear stories, and does not contain more than three clear stories above ground, exclusive of rooms in the roof, or measures in height 22 feet, and not amounting to 31 feet from the foot way of either of the fronts, to the top of the blocking-course, or parapet.

And every dwelling-house with offices belonging and adjoining, or connected otherwise than by a fence or fence-wall, or covered passage open upon one or both sides, when finished exceeds the value of 300 l. and does not amount to more than 850 l.

And also every dwelling-house, which exceeds five squares of building on the ground plan, and does not amount to more than nine squares, are all and each of them of the second rate.

THE THIRD RATE.

Every warehouse, stable, and other building, (except such buildings as are described to be of the first, fifth, sixth, or seventh rate) not being a dwelling-house, which exceeds one clear story, and does not contain more than two clear stories above ground, exclusive of the rooms in the roof, or measures in height more than thirteen feet, and does not amount to twenty-two feet, from the foot-way of either of the fronts, to the top of the blocking-course, or parapet.

And every dwelling-house with offices belonging and adjoining, or connected otherwise than by a fence, or fence-wall, or covered passage open on one or both sides, when finished, exceeds the value of 150 l. and does not amount to more than 300 l.

And also every dwelling-house, which exceeds three and an half squares of building on the ground plan, and does not amount to more than five squares, are all, and each of them, of the third rate.

THE FOURTH RATE.

Every warehouse, stable, and other building (except such buildings as are described to be of the first, fifth, sixth, or seventh rate) not being a dwelling-house, which does not exceed one clear story above ground, exclusive of rooms in the roof, and measures in height not more than thirteen feet from the foot-way of either of the fronts to the top of the blocking course, or parapet.

And every dwelling-house, with offices belonging and adjoining, or connected otherwise than by a fence, or fence-wall, or covered passage open on one or both sides, when finished, does not exceed the value of 150 l.

And

And also every dwelling-house, which does not exceed three and an half squares of building on the ground plan, are all, and each of them of the fourth rate.

The act directs, that every master-workman, or owner, shall give 24 hours notice to the surveyor, in whose district any building whatever, from the first to the seventh rate, is to be altered or erected.

That as it is found by experience, that most buildings, in general, are more often begun by the bricklayer than by the carpenter, there will be no kind of impropriety in saying, it will be the bricklayer's business to give such notice, except where a foundation is to be piled or planked; and then it becomes the business of the carpenter.

But be this as it may, the observation is only made from supposing, that the workman who lays the first stone would wish to lay it right, and therefore if the surveyor cannot attend within the 24 hours, he must himself observe the directions of the act, which will be hereafter severally explained. And first of external walls.

The act calls every front, side, or end wall, &c. (not being a party wall) an external wall: and as it has before been said, that there are but four rates of building, whose thickness of walls is described by the act.

The walls to each rate both in substance and form, according to the express declaration of the act, are not to be less in thickness than as they are described, yet it must in course be presumed, that they be made as much thicker as the nature of the building, or the owner of it may require.

The footings to the walls are to be with equal projection on each side, but where any adjoining building will not admit of such projection to be made on the side next adjoining to such building, the act allows it to be done as near as the case will admit, and this to each of the four rates.

The bearing of the timbers in each rate, as girders, beams, or trimming joists, &c. which in all cases, and in all the above four rates, may be as much as the nature of the wall will admit, provided there is left four inches between the ends of such timbers and the external surface of the wall.

The stories are to be made in number agreeable to the rate to which they belong; but their height may be made discretionally.

The act expresses the thickness of the walls in feet and inches, as well as the number of Bricks of which such thickness is to be composed; this last method being thought most familiar to workmen in general.

The joints of the Brick-work must answer to the express number of Bricks of which such wall is to be composed.

External walls, and other external inclosures to the first, second, third, fourth, and also the fifth rate of building, when built hereafter, must be of Brick, stone, artificial stone, lead, copper, tin, slate, tile or iron; or of Brick stone, and such artificial stone, lead, copper, tin, slate, tile, and.

and iron together, except the planking, piling, &c. for the foundation, which may be of wood of any sort.

If any part to an external wall of the first and second rate is built wholly of stone, it is not to be less in thickness than as follows.

First rate, 14 inches below the ground-floor; 9 inches above the ground-floor.

Second rate, 9 inches above the ground floor.

Where a recess is intended to be made in any external wall hereafter to be built, it must be arched over, and in such manner, as that the arch, and the back of such recess, shall respectively be of the thickness of one Brick in length; therefore it follows, that where a wall is not more than one Brick thick, it cannot have any recess.

No external wall to the first, second, third, and fourth rate, is ever to become a party-wall, unless the same shall be of the height and thickness above the footing, as is required for each party-wall to its respective rate.

Party-walls. Every building of the first, second, third, and fourth rate, hereafter to be built, which is not designed by the owner thereof to have separate and distinct side-walls, on such parts as may be contiguous to other buildings, must have party-walls; and they are to be placed half and half, on the ground of each owner, or of each building respectively, and may be built thereon, without any notice being given to the owner of the other part, that is to say, the first builder has a right so to do, where he is building against vacant ground.

All party-walls, and all chimneys, and chimney-shafts hereafter to be built, must be of good sound Bricks, or stone, or of sound Bricks and stone together, and must be coped with stone, tile or Brick.

When the situation of the floors are different levels, it may not be improper to shew in what manner the walls must be built, where such difference of level may happen; as for example, suppose a party-wall is to be built between two old houses, and there is occasion to sink the cellar story of one of the houses below the level of the floor of the other; in that case the wall must have its declared depth, below the floor of the lowest building, and so under the ground-floor; and also above the garret floor, which is to be carried up to its proper thickness, as high as the underside of the floor of the highest building.

Stone corbels must be inserted where the wall will not allow of a sufficient bearing, because the act expressly says, there shall be 8 inches $\frac{1}{2}$ of solid Brick-work, between the ends and sides of all timbers which lay opposite to, or on a level with other timbers of the adjoining building.

Party-walls, or additions thereto, must be carried up eighteen inches above the roof, measuring at right angles with the back of the rafter, and twelve inches above the gutter of the highest building, which gables against

against it; but where the height of a party-wall so carried up, exceeds the height of the blocking course or parapet, it may be made less than one foot above the gutter, for the distance of two feet six inches from the front of the blocking course or parapet.

And where dormers or other erections are fixed in any flat or roof, within four feet of any party-wall, such party-wall is to be carried up against such dormer, and must extend at least two feet wider, and to the full height of every such dormer or erection.

There is no recess to be hereafter made in any party-wall of the first, second, third and fourth rate, except for chimney-flues, girders, &c. and for the ends of walls or piers, so as to reduce such wall in any part of it, to a less thickness than is required by the act, for the highest rate of building to which such wall belongs.

No opening to be hereafter made in any party-wall, except for communication from one stack of warehouses to another, and from one stable building to another, all which communications must have wrought iron doors; and the pannels thereof not to be less than one quarter of an inch thick, and to be fixed in stone door-cases and sills. But there may be openings for passages or ways on the ground, for foot passengers, cattle, or carriages, and must be arched over throughout with brick or stone, or brick and stone together, of the thickness of a brick and half at the least, to the first and second rate, and one brick to the third and fourth rate. And if there is any cellar or vacuity under such passage, it is to be arched over throughout, in the same manner as the passage over it.

No party-wall or party-arch, or shaft of any chimney, new or old is to be cut into, other than for the purposes as follow.

Where the fronts of buildings are in a line with each other, a break may be cut, both in fore and in back front of such buildings, (as may be already erected) for the purpose of inserting the end of such other external wall which is to adjoin thereto; which break must not be more than nine inches deep, from the outward faces of such external walls, and not to be cut beyond the centre of the party-wall thereto belonging.

And further, for the use of inserting bressummers and story posts, that are to be fixed on the ground floor, either in the front or back wall, which recess may be cut from the foundation of such new wall, to the top of such bressummer fourteen inches deep from the outward face of such wall, and four inches wide in the cellar story, and two inches wide on the ground story.

And further, for the purpose of tailing-in stone steps, or stone landings, or for bearers to wood stairs, or for laying in stone corbels for the support of chimney jaumbs, girders, beams, purloins, binding or trimmings, joists, or other principal timbers.

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And further, perpendicular recesses may be cut in any party-wall whose thickness is not less than thirteen inches, for the purpose of inserting walls and piers therein, but must not be made wider than fifteen inches, or more than four inches deep, and no such recess to be nearer than ten feet to any other recess.

And all, and every such cuttings and recesses must be immediately made good and effectually pinned up, with brick, stone, slate, tile, shell, or iron, bedded in mortar.

But no party-wall is to be cut for any of the above purposes, if the same will injure, displace, or endanger the timbers, chimnies, flues or internal finishings of the adjoining buildings.

And further also the act allows the footing to be cut off on the side of any party wall, where an independant side-wall is intended to be built against such party-wall.

When buildings (except the inns of court) that are erected over gateways, or public passages, or have different rooms and floors, the property of different owners, come to be rebuilt, they must have a party-wall, with a party-arch or arches, of the thickness of a brick and half at the least, to the first and second rate, and of one brick to the third and fourth rate, between building and buildings, or between the different rooms and floors that are the property of different owners.

All inns of court set apart for the study or practice of the law are excepted from the regulation as above, and are only necessitated to have party walls, where any room or chamber communicates to each separate and distinct stair-case, and which are also subject to the same regulations as respect other party-walls.

Where a building of a lower rate is situated adjoining to a building of a higher rate, and any addition is intended to be made thereto, the party-wall must be built in such manner, as is required for the rate of such higher rate of building so adjoining.

When any party-wall is raised, it is to be made of the same thickness, as the wall is of, in the story next below the roof of the highest building adjoining, but is not allowed to be raised at all, unless it can be done with safety to such wall; and the building adjoining thereto.

Every dwelling house hereafter to be built which contains four stories in height from the foundation, exclusive of rooms in the roof, must have its party wall built according to the third rate, notwithstanding such dwelling-house may be of the fourth rate.

And every dwelling-house hereafter to be built which exceeds four stories in height, from the foundation, exclusive of the rooms in the roof, must have its party-walls built according to the first rate, notwithstanding such house may not be of the first rate.

CHIMNIES

CHIMNIES, &c. No Chimney whatever to be erected on timber, except on the piling, planking, &c. of the foundations of the building.

Chimnies may be built back to back, in party-walls; and where so built, must not be less in thickness from the centre of such party-wall than as follows.

First rate, or adjoining thereto, to be one brick thick in the cellar story; and half a brick in any of the upper stories.

Second, third, and fourth rate, or adjoining thereto, to be three fourths of a Brick thick in the cellar story; and half a brick in any of the upper stories.

Where Chimnies in party-walls do not stand back to back, they may be built in any of the four rates as follow.

From the external face of the party-wall to the inward face of the back of the Chimney in the cellar story, one brick and an half thick from the hearth, to twelve inches above the mantle.

Backs of Chimnies not in party-walls, to the first rate must not be less than a brick and half thick in the cellar story, and one brick thick in every other story, and to be from the hearth to twelve inches above the mantle.

N. B. If such Chimney is built against any other wall, the back thereof may be half a brick thinner than as above described.

Backs of Chimnies not in party-walls of the second, third, and fourth rate, must be in every story at least one brick thick from the hearth, to twelve inches above the mantle.

N. B. These backs may be also half a brick thinner, provided such Chimney is built against any other wall.

All breasts of chimnies, whether in party-walls or not, must not be less than one brick thick in the cellar story, and half a brick thick in every other story.

All withs between flues are not to be less than half a brick thick.

Flues may be built opposite to each other in party-walls, but not to approach to the centre of such wall nearer than two inches.

All Chimney breasts next the rooms and Chimney backs also, and all flues are to be rendered or pargetted.

The backs of Chimnies and flues in party-walls against vacant ground are to be lime whited, or marked in some durable manner, but to be rendered or pargetted as soon as any other building is erected to such wall.

No timber whatever is to be over the opening of a Chimney for supporting the breast thereof, but must have a brick, or stone arch, or iron bar or bars.

All Chimnies are to have slabs, or foot paces of stone, marble tile, or iron at least eighteen inches broad; and at least one foot longer than the opening of the Chimney when finished, and which slabs or foot places must

must be laid on brick or stone trimmers at least eighteen inches broad from the face of the Chimney breast, except where there is no room or vacancy beneath, and then they may be bedded on the ground.

No brick funnel is to be made on the outside of any building of the first, second, third or fourth rate, next to any street, square, court, road, or way, so as to extend beyond the general line of the buildings therein.

No funnel of tin, copper, iron, or other pipe for conveying smoke or steam, is hereafter to be fixed next any public street, square, court, or way to the first, second, third, or fourth rate, nor no such pipe is to be fixed on the inside of any building nearer than fourteen inches to any timber, or other combustible material whatever.

BRIDGE, an edifice either of stone or timber, consisting of one or more arches erected over a river, or the like, for the conveniency of passing over.

We enter now upon a part of the architect's province, detached from all the others, but as essential to him as any. There is the more need that we treat this clearly, because the ideas commonly entertained of it are very confused; and we must do it fully, for little has been said by others proportioned to the importance of the subject.

The origin of Bridges may be traced back almost to the origin of mankind; the first disgust would then separate families, and rivers were the natural bounds of the partition: those feuds would end with those who first separated from their influence; and an intercourse would naturally be established among their descendants. The deeper the river the better it served the purpose of separating; and its depth, as soon as an intercourse were established, demanded a Bridge; this is one natural and plain original; founded on that inconstancy of our nature which we should at once despise and lament: but besides this there would arise among the first families a variety of others; curiosity, a desire of enlarging their possessions, the chase, the imagination of products in countries separated by the largest rivers; all these would lead men early over them. Forging and swimming are inconvenient, troublesome, and beneath the dignity of reason; they are the means of beasts; but our faculties were given us to nobler purposes than that we should follow such examples. Men no sooner saw rivers than they desired to cross them; and they no sooner found advantage on the other side than they desired to do it often, easily, and with security. This gave the origin to Bridges among people who were worthy of the name of civilized. Egypt may yet see her rude sons dragged across rivers on a bundle of straw drawn by a cow; so Norden, faithful and accurate in all things, has described them; but these are not examples of human nature, except in the one instance, in its slowness to exert its qualities. The more enlightened among them many thousand years before had Bridges; and we will see in all countries

tries the remains of them, various and stupendous. Janus is honoured as the inventor of them, among the earliest people of whom we have accounts in profane history, and it is recorded on medals to his honour: we have many such truly antique, and, with the designs of Bridges, sufficiently singular on the reverse; but the many ages that had passed before the period of their earliest history, convince us this was fable.

The floating Bridge has been admired in all ages, and we have various instances of its use. It is a temporary contrivance, but the invention great. We admire the Roman's Bridge of boats across the Rhine; but it is with astonishment we read of that Xerxes constructed of ships over the Hellespont. The earliest Romans speak of the *Pontes utribus superstrati*; and we know the use of pontoons in the modern arts human destruction. These stand as objects of curiosity or wonder, and have their use on singular occasions; but it is not of these we are to treat. As we meet with the accounts and the representations of these in figures and coins among the learning and antiquities of celebrated nations; barbarity, as Greece affected to call the state of other countries, and as Rome thought it, is not without its remains of the same kind; wild indeed, and romantic, but equally astonishing. Chains have been drawn across rivers from tree to tree, and wicker cradles extended to amazing lengths. Not only rivers have been thus made passable, but horrible precipices at land connected by this bold, wild thought: the traveller has crossed from brow to brow of perpendicular mountains, and trembled as he felt the Bridge dance under him, and saw the depth below.

These in their way equal, nay in the boldness of invention, excel those vast works, which, in the way of Bridges upon land, formed the aqueducts of ancient Rome; nor is there any thing in the invention of man more inexplicable than the manner in which they have been drawn across. We see with wonder the spider dancing in an autumn morning upon a thread drawn from tree to tree at several feet distance; the manner in which this wonder is performed we have watched, and it has been called, not amiss, the spiders flying, but human bodies are too heavy; and it is not to be conceived by what strange art the effects we see have been produced; only there remain the proofs that there has been such art, for the thing is done.

Of fixed Bridges. We have treated of a kind of Bridges that may properly enough be called moveable; they are temporary expedients, and they answer their purpose; but they could only have an occasional notice here, because they do not come within the province of the architect. A great deal is expected of him under this head in his own proper way, and he will do well to consider what has been done, and thence to advance to what may be. He will know thus what to adopt and where to improve. He will find an essential difference between those made for show more

than service, thrown over canals and rivulets in gardens, and never to be pressed with more than the human weight; and those rivers fitted for serviceable purposes, and made to bear the weight of carriages.

He will for the first kinds see light work sufficient, but then it must be put together upon the principles of art: for the other we shall give various instructions, nor must he omit to consider that design by which Palladio has constructed a Bridge which grows firmer for pressure, either sideways or above, whether or not he has exactly given us that of Cæsar.

These distinctions of strength are all that occur to the architect between the Bridges in gardens and those over rivers for useful passage; the first is a walk continued over the water, and the latter a road continued over a river. Thus they are to be considered, and they are to be made elegant in both kinds, though with the different regards of strength. They must be made convenient, durable, and handsome; this is the language of architecture.

In gardens there will be often beauty in raising them by a considerable sweep above the level of the surface; but this, in those Bridges of constant and laborious passage, must be considered as an article of disadvantage. In regard to the breadth of the river, the level of the sides, the passage of boats underneath, and other circumstances, it will often be necessary to give a considerable height; but let the architect consider this as an inconvenience, though a necessary one; and to remedy what he cannot avoid, he must take care to make the ascent and descent easy by taking a sufficient scope. In gardens the place for a Bridge is at the opening of some principal walk; and this should be also contrived in such a manner, that while it answers the purpose of communication there, it may be a proper and handsome object from other parts of the garden.

In Bridges of public service the place for them is to be such as will admit a commodious and easy passage from all other parts. A middle situation is preferable, for at any extreme the farthest parts whence it is to be crossed will have the inconveniency of too long a journey. The general place being thus settled, there remains to consider the best immediate spot. This will depend upon three circumstances, the breadth and depth of the water, and the firmness of the bottom; the expence depends on one, the duration on the other. Where the water is narrowest and shallowest, the Bridge will be cheapest; but if the bottom be unsound, the whole fabric will fall; it is better to be at twice the charge where the structure will last ten times as long. Rock or hard gravel are the best bottoms on which to build in rivers; sand is too moveable, and mud can afford no security. The more level the bottom the greater will be the convenience of building; and on the same principle the good architect will chuse a part of the river where it runs for a considerable course straight on; this avoids the dangers of those removals of the bottom, which
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will often happen in every kind except rock, where there are turnings and windings in the course, which give the currents force in time of floods to tear up almost any thing.

A great deal of strength and security may be given to the whole fabric by its proper fixture to the land on each side; but this can only be had where the land itself is permanent, for in cases of many turnings and windings, the shores are washed away or undermined, and the reliance on this security deceives the builder. Violent turnings in the course of the stream also make lodgments of matter at some distance; and this may be of very bad consequence. The matter which is torn up in one place is naturally let fall in another at some distance, the most likely place for this subsidence is where there is some opposition or obstruction; and therefore a Bridge may greatly suffer by it.

If, instead of the part we direct, where the river runs strait for some considerable space, the architect should fix upon a place at a small distance below some turning, the consequence upon the preceding principles would be just this; the first flood would tear up some of the bottom just where the turning lies; and the Bridge a little below obstructing the course of the water, the matter would subside there. Thus there would be a choaking up of the stream about the Bridge, begun; and it is easy to see how difficult this would be to remove, and how the damage would increase. The lodgment first made from above would receive and detain, from every flood, the foulness from a great way up the river: thus by degrees the current would be choaked where it ought to be most free; the passage of boats and barges would be obstructed, and there would follow a yet more dangerous consequence, that of the river changing its course; for being obstructed in the natural bed, it would at floods force itself a passage on one or both sides; thus carrying away the land from the foot of the Bridge on each side, and altering its original purpose; taking away certainly a part of its natural strength, and perhaps rendering it wholly useless. The choaking the passage for boats is not the only ill consequence of this lodgment, it tends to the destruction of the Bridge; for besides the natural consequence of weakening it at each end by loosing or washing away entirely its supporting banks, the weight will also in time overset the whole fabric.

Buildings in cities must be constructed upon the same principles in all respects. The most central spot, that is not liable to the inconveniences we have recounted, is best, as it will serve equally all the inhabitants; and if in such a central place the river be not broader nor deeper much than elsewhere, and if it have a strait course and level bottom, this is against all other choice the place for a Bridge. The place determined, the next choice is in the materials, and there are only two, wood and stone. The first is cheaper, but the latter most durable.

Of wooden Bridges. The Bridges of that sort we have named for gardens are naturally of wood; they are cheaper, lighter, and make a great shew for little labour; but in the great and serviceable kind, this material is far from being excluded. There are methods of building with wood that almost vie with stone for its great quality, duration. The first point is, that the timber be sound and well seasoned; the next, that it be in sufficient large pieces. The timber must be substantial and well joined, or all will presently be in ruin. It is not only the pressure above that must be guarded against in these, but the power of the water in an increased quantity and forced rapidity. Fifty wooden Bridges are destroyed by floods, for one that fails beneath the weight above. The broader the river the larger will be the Bridge; and in proportion to this the timber must be more massy; and the rapidity of the river, not only in its common course, but as increased by floods, must be computed for the fixing.

The bridge of Cæsar across the Rhine contains many excellent lessons for the strength of those, in whatever form, that are constructed of timber. The first pieces were eighteen inches thick, and fixed in the river, not upright, but leaning according to the course of the stream. These were double; joined together at two feet distance, and at forty feet distant in the lower part of the river, he fixed against each pair of these two others bearing against the stream. Between these double piles, which were well rammed into the bed of the river, there were placed long summers, two feet thick, held fast at each end by two braces. These pressing contrary to one another, gave that strength we named before, increased by weight above, or force sideways. These summers were joined with others laid across, and all was then covered with hurdles. Piles were placed as buttresses against the force of the water, and others above to stop the force of trees or timber, which chance might throw into the stream, or an enemy purposely float down to destroy the work. Over this bridge illustrious Cæsar passed with his army to show the Roman prowess to the Germans.

Of Bridges of one arch. There are many reasons for building a bridge of a single arch, and where the extent of the river is any thing considerable, no piece of wood-work will require more skill in the fabricator, nor will any do him more honour. He will in no instance find timbers necessary to be joined to a greater length than in the forming a bridge without middle piers over a river of any extent; but the arched form assists, and it may be done with more security than many would imagine. The advantages are very great: the common accidents which throw down bridges will have no power over this. For one fabric of this kind which fails by any natural decay, thousands are torn or thrown down by torrents from land-floods, by loads of ice or floating timbers, which the swelling
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of the water has brought from their places ; and its force throws with an irresistible violence against the piers.

There are many places where the Bridge is an annual charge ; and whenever the extent is not beyond all reasonable proposal for a single arch, that should be the method of avoiding it : if ten times the price were paid it would be frugality ; but indeed skill is required more than price in such a fabric.

No Bridge is more beautiful than one of a single arch ; none more convenient ; and besides the numerous accidents which are avoided, and from which security there results a promise of great duration, none are stronger ; for these, when well framed, compose a body more firm, than if cut in a vast thickness from a single piece, the parts here strengthening and supporting one another. Palladio has given a figure of one which he laid across Cismone, where the breadth of the river was a hundred feet ; its strength appears incontestible from the structure, and experience shewed it to be what it seemed ; but there is yet another great advantage in this Bridge, which is, that it lies level with the rest of the road, and does not tire the traveller with an ascent and descent. A person unacquainted with mechanics shudders to look upon it but in the representation ; but to those who know the subject there appears no danger. This advantage of building a Bridge without rise we very much commend to the architect.

Of the Construction of such a BRIDGE.

The great support of a Bridge that has no intermediate piers must be at the banks, and in this case the natural ground is never to be trusted : therefore let the architect begin by erecting on the shore two massy buttments of stone capable to bear any pressure, and resist any force. These raised to the level of the ground, let him take the measure of their distance, and divide this into quantities of about sixteen feet. The space thus reduced to a number of complete measures, the fabric of the Bridge may be begun.

Its breadth cannot be determined to feet or inches, nor needs there any such account : that is an article to be suited to the immediate purpose of each occasion. Let as many beams be cut as there are divisions of this measure, suppose five ; and let their length be that of the breadth of the intended Bridge. These make the beds of the fabric. These laid, there are to be placed lengthwise on them other beams which make the sides of the Bridge : but there must be a small space of the end of each of the first beams free.

The next part are the uprights, which support the railing. These must be fixed on each side directly on the first laid beams ; they must be fastened strongly with cramps of iron, let through the holes made for that

purpose, in those ends of the beams which run out free beyond the side-pieces.

This is the regular manner of working, and thus will be seen in a few pieces the extent and form of the intended Bridge. The uprights are not to be all of a length; for the railing must be highest in the middle of the Bridge, and slant to nothing at the two ends. The posts, or uprights, must therefore be of the form proper to support such a figure, and gradually shorter: these, according to the pleasure of the architect, or intention of the bridge, in regard to plainness or ornament, may be either left naked or plain as they are cut, or crowned with balls. In the simplest designs they may be left square as they are cut off; in those, a little more ornamented, the tops may be cut into a number of angles, and capped, if needful, with iron; and in those most intended for show, tho' nothing in this kind should aim at much, they may be cut off level at the top, and a ball with a proper base and neck may be fixed upon them. The iron cramps which fix these uprights to the cross beams are to run up a great part of their height, and there must be holes through them for fastening them by strong iron pins. They must be fastened again below with pins or small bars of iron. By this means every part of the Bridge will be firmly united, and the several members will support one another; the cross-beams, the side-beams, and the uprights are by these cramps fastened into one solid mass.

This construction is not only firm in itself, but it has that happy strength we named in Cæsar's Bridge, the parts supporting one another, and joined in this manner, are made more firm, the great weight presses them. This is at least true of all weights which can ever come upon a Bridge; and that is enough for practice. The more they are pressed the faster they close, and the stronger is the work. The best way of working is to begin from the buttment on each shore, and the parts may be thus brought forward each way to meet one another.

Of wooden BRIDGES over larger Rivers.

The construction of a Bridge of one arch is not limited to any particular measure in the breadth of the water; but the eye of reason will distinguish without being told, that these kinds are suited to smaller rather than larger rivers. We will suppose the architect employed to build a Bridge of timber over a river, of twice the breadth of such as we have named; in this case it will be proper to support the work with solid buttments on each shore, and to allow it at certain distances piers, or supports of firm upright timber, from the river's bed. The smaller the number of these the better, provided the Bridge have due strength, because the fabric will in proportion be less liable to accidents. We have observed, that the most frequent destruction of these Bridges is from ice,
timber,

timber, or other heavy matter thrown against them by floods. The fewer the supports in a river of given breadth, the more chance these solid bodies will have of going free, or of being washed through them, instead of remaining to bear with the full force of the water against them.

The number is to be so proportioned, that one may stand at about five and thirty feet distance from another; this will leave wide arches, and there will easily be strength enough given in the construction of the work with these distances. We have not only the authority of geometrical computation in this case for the supporting us, but the practice of Palladio; he threw over the Brent near Bassano. The river is a very rapid one, and its breadth in that place a hundred and eighty feet. The measure he allowed between pier and pier was thirty-four feet six inches, and the Bridge stood all the fury of the torrent; very elegant in its construction, and a lasting monument of his skill.

The rows of piles in this case should be placed firmly, and they must be in themselves solid; a foot is the best distance for them one from another; their number should be eight in each row; and they should be a foot and a half in diameter; thirty feet is a natural and usual length; and, according to this construction, the Bridge will have a breadth of six and twenty feet. Over the rows of piles are to be placed cross-pieces or joists; the length of these is to be determined by the extent of the others, and they must be well fastened every where. These keep all together. Over these cross-pieces, plumb with the supports, are to be placed eight other pieces lengthways. These would be in danger of swagging from their great length, if no farther care were taken; but they will be very well supported by carrying strong shoulder-pieces each way from them; and other beams must be raised slanting under them from the piles, and join a middle-piece.

There is here a form resembling a quadrant of a circle; and it is not only a source of strength but beauty. The strength results from a very plain principle; that the beams which make the length of the Bridge are double in the middle, and they and their supports mutually fix one another.

The work being thus far advanced, the bed of the Bridges is to be laid on; this must consist of pieces laid across the beams we have just named. The length of these must be a little more than the breadth we have allowed for the Bridge; for it will be proper to let their ends project a little. There is always an additional strength in this; and the ends thus projecting resemble the modillions of a cornice, and are an ornament. A Bridge of this kind will be strong, beautiful, and of little expence; it will bear a superstructure if the architect please. Palladio covered such a one with a roof supported by columns; but for common occasions a railing of sufficient strength, breast high, supported by uprights, and decorated.

decorated with balls, as we mentioned on a former occasion, will perfectly well answer the purpose. The banks must be in these cases secured by a strong wood-work, or by buttments of stone; and upon the same principles may be built a variety of Bridges of this kind; the timber being suited to the depth of the water, and to the length of the Bridge. The lighter the less experience; but where there is great breadth, the strength ought to be more consulted than the charge; for the danger is great in slight Bridges, and repairs are difficult.

Of Stone Bridges. The wooden Bridges whereof we have hitherto treated are cheap in proportion to those of stone; and they will stand a long time, but the solidity, dignity, and superior elegance of the others, when well wrought, leave no room for comparison in point of real excellence. These therefore are the kind the architect should propose where the proprietor does not limit the expence, and where he hopes to do himself the most lasting honour. The principles on which the stone Bridge is to be constructed, differ in nothing from those of timber ones with respect to choice of place and situation. The bottom must be sounder for these than for the others, because more stress is laid upon it; and the banks must be defended by buttments of stone, which make a natural part of the work. These heads or buttments at the banks cannot be too strong: they will be exposed to a great weight; and upon their firmness will in a great measure depend that of the whole Bridge: for this is to be considered as one great arch, and it must have its lateral pressure. If these buttments, which are its support give way, all will be in danger of cracking; but while they are firm, the more the weight, the more compact the whole becomes. The buttments, or head-works, must be carried a considerable length upon the shore, that they may have the more security and force; and the way being carried over there to the Bridge, not only the strength will be more, but the passage will be continued, though waves and floods should eat away the banks. The buttments being made, the next consideration regards the piers. These must be proportioned in number to the extent of the river and intended form of the Bridge, but it is an universal rule, that they should make an even number.

This is a doctrine delivered from father to son among the architects, though many receive it without examination; and those who call themselves a little wiser, have rallied it as a piece of superstition. The judicious architect will return the raillery upon themselves: he will shew them by various designs, that an even number of piers make a more agreeable appearance than an odd; and he will add, that such a number leaves an arch in the middle, where the odd number would place a pier. The course of the river is naturally strongest in the middle; and would an architect place a pier to obstruct its course? The giving a larger opening
than

than for the rest in that place, allows passage where it is most wanted, and is every way most rational and convenient.

In many places the course of the river is less regular; but still it is easy to find where it is strongest. This will be seen by the clusters of floating refuse matters that are carried upon it; and even this is to be consulted in a secondary manner; the architect contriving openings, and not piers in these places. The places for Bridges we have considered before; and this being chosen, something is to be added as to the time of beginning the work. Autumn is the season when rivers are lowest in water; this is therefore the most eligible time; and in places where the tide has influence, all experiments must be taken at low water.

In some places the foundation is made by nature; these are happy circumstances; in others it must be by digging. Gravel or rock are two safe bottoms. On these any weight may rest; and nothing is required but a level surface. We here speak of that hard, clean and solid gravel which lies in a mass like rock, and is of a great depth. In some rivers the bottom is a loose gravel lying over mud; this is to be considered in the same light as sand; and both are to be dug through, if that can be done, till the architect comes to a sound foundation; for they are not of that nature; and no dependance must be placed upon them. In some places there lies a sound bottom at a small depth beneath them; and in such instances the sand or loose gravel must be dug away a sufficient compass for laying the foundation of the piers. In other places no sound bottom is to be found under them within any moderate depth; and in these cases recourse must be had to piling. For this purpose piles or long beams of oak shod with iron must be used; the sand or loose gravel must be dug away to some depth, and they must be driven in with engines till they come to the firm ground and get some way within it. Their heads are then to be sawn off level, and the work carried on upon them.

When the foundation of the pier is laid, one part of the bottom must be enclosed and kept dry, that the workmen may pursue their business unmolested by the water; and thus they are to proceed with the whole.

The thickness of the piers must be proportioned to the width of the arches. About a fifth part of the breadth of the arch is the proper measure, but this may be varied according to the circumstances; they will very rarely be required slenderer than one-sixth of the breadth, or more massy than a fourth. When the piers are thick, let them be built with large stones. They are to bear a great deal. And they should be so bound and fastened together as to be like a rock; they should be held together with cramps of iron soldered in with lead; and there bearing jointly the weight or pressure, the whole mass will be as one stone. The form of the piers is left in a great measure to the fancy of the architect, only that he must observe not to oppose a flat face to the stream.

Y

Some

Some prefer a circular front in this place, others a right angle: there is no preference to be given in absolute terms to either, but the occasion must determine. If the great care be not to interrupt the stream, an angle is the best; if there be fear of heavy objects striking against it, the best is the circular form.

In the construction of arches the work must be very carefully done, and large materials used. There is no making a large arch of sufficient strength with small stones. The stones should be examined in regard to their quality as well as bigness; they must be sound and firm, and they should be cramped in with iron. The calculation of what they are to bear should be always made upon the extreme; not from the common course of things, or known weight of carriages, but like a proof of cannon with a double charge. Accidents may occasionally bring upon it a much greater weight than is first thought; or its fabric may from some unseen causes be less solid than imagined; it is best therefore to err on the side of too much strength.

Of the form and covering of ARCHES.

By Arches the student should understand segments of a circle. The Gothic are disclaimed, and there is no form which is capable of so much strength as the plain sweep of a true circle; the elliptic should never be admitted for Bridges. In the first construction of buildings, the Gothic or sharp Arch was not unnatural, but they improved who took off the point.

The first Arches probably were suggested to men by the vaulted walks formed with double rows of trees; these are very pleasing, and they are of the same kind. Nature sends up the branches of trees in an oblique direction, therefore they meet, where opposite rows stand near, in this pointed vault, resembling the common roof of a barn. Thence the first builders copied, but the sweep of a circle was soon found a more eligible figure, more noble in itself, more strong and capable of more bearing; they were therefore unpardonable, who, knowing this improvement, fell back into the paths of barbarism. The Arches of a bridge are therefore determined, by all the laws of science, to be of the circular form; they are more strong, more elegant, and capable of more duration as well as bearing.

There yet remains a question which architects have not enough established in their practice, though nothing is more plain in theory. The Arch of a Bridge we have determined is to be a part of a circle, but of what quantity? More than the half of a circle cannot be used; but less may, in various degrees; and the judgment should direct where the fancy of the architect usually does.

Let

Let all be taken into consideration together. The semicircle is the strongest and the most elevated of all figures for an Arch; and it has the vast advantage of all the pressure falling upon the piers; but with those advantages there are inconveniences; the principal is height. It is a great defect in the construction, to let a bridge tire the passengers with a steep ascent; yet this in many cases will be the necessary result of the semicircular Arch. We shall direct how it may be alleviated, but the architect must resolve, whether these helps will or will not obviate the objections.

There are also instances where the disposition of the piers will not well admit of semicircular Arches; we have named the accidents on which the rule of this disposition depends, some of which are unconquerable, and, of an absolute necessity, must be complied with; and in these cases the strength and beauty of an Arch, such as we recommend, are not enough to atone for variations in the essential parts. Therefore the quantity of the Arch must be lessened; and architects may be saved a great deal of needless calculation, by being told the next proportion for these parts to the half of a circle is a third. This is his choice, but a great deal more is to be considered; for the nature and bearing of the work are altered by it.

In a design where the Arches are to be semicircular, the great attention of the architect must be to give strength to the piers, and a secure foundation: for in these arches all the weight presses there; in the lesser Arches the force will be very great upon the buttments or heads built at the banks; and these must therefore be strengthened accordingly; we have directed, that in all bridges this be well secured, but in these there must be greater caution.

Here the student sees another instance of that invariable rule we gave him of taking the whole of every thing into consideration before any part is executed. The strengthening the banks is always proper and always necessary; but we see here that, besides the various accidents which may make it more needful in one place than another, the very construction of the bridge itself may in a great degree influence in this matter.

Of the duration of Stone BRIDGES. If the proprietor or the public, on lesser or on greater occasions, should be induced by the cheapness to prefer a Bridge of wood, we shall remind him of the vast difference in duration of the two kinds, and may support what would also seem extravagant accounts, from the remains of Roman Bridges, some almost entire. The Elia Bridge, the work of old Romans, stands to this day; it is the Bridge of St. Angelo over the Tyber. The *Quattro Capi* Bridge, so called from the four-faced statue we have mentioned treating of the *Termini*, is the *Fabrician* Bridge, named from *Fabricius*, its great founder.

founder. The Certian Bridge of Old Rome is St. Bartholomew's Bridge, of the modern denomination; and the Rustic Bridge, called at this time St. Mary's, is the famed Senatorian Bridge of antique Rome. All these remain in a condition that does great honour to their builders, and will, in the eye of reason, plead far beyond words in preference of those of stone. These the judicious architect should quote to those who think of nothing but the price of structures; and we have told him also how to build for ages.

Of the construction of Stone BRIDGES. The ornaments of which stone Bridges are capable are very great; but, to be properly employed, the architect must take them into consideration in the very beginning, and form his whole design accordingly. This may be varied in the number and form of the arches; and the superstructure may be carried to any degree of elegance. We have shewn how a Bridge of timber may carry columns supporting a roof, even where the whole fabric is far from massy. In more solid structures of that kind, and much more in those of stone, the genius of the architect is left unlimited; and houses and public places of resort may be contrived upon them.

We shall consider first those of a simpler Structure.

The dimensions of the river are the first articles in the consulting such a design; and, according to these the Bridge may be erected with different numbers of arches. A hundred and eighty feet was a measure we took before for a wooden Bridge, we will suppose a river of the same extent to be the place of a stone. The current, the ground, the banks, and every circumstance considered, we will suppose three arches allowed to the Bridge. The central arch must be larger than the others, but the proportion of that excess must be considered. If we allow sixty feet for the breadth of this, and forty-eight for that of the two others, there will be sufficient proportion; and the piers needful for supporting such a Bridge will leave free compass enough for the course of the river. These piers, if made of the solid and large materials we have directed for these purposes, need only have a fifth of the measure of the middle arch for their thickness, that is, twelve feet; and this they must be allowed with the best workmanship.

If the current be very sharp, the piers must project forward beyond the body of the Bridge, that they may stand uninjured, not only the force of the stream, but the accidental blows they may receive from hard bodies brought down upon the water. There is no security against these accidents equal to this of carrying on the pier beyond the measure of the Bridge, except that of carrying on a lower building far beyond that. This is oftener done than needful. This kind of Bridge, under such dimensions, of the length, number of the piers, and disposition of
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the arches, would have been too steep of ascent with the semicircular form; therefore the smaller measure is every way preferable, and under this distribution of parts, it will be very elegant. No more is required for the construction of this Bridge, and the architect is at liberty to adopt what degree of ornament he pleases. There must be a defence breast-high, or more; and this may be either a plain parapet, or balustrade work; and over the piers may be lodges of convenience for many purposes; but this must be determined, not by fancy, but by the rest of the structure. If the under part be plain, the parapet should be the same: if the rest of the Bridge be more ornamented, this may take also the same turn of decoration.

A Bridge of this construction takes the less ornament, as the number of parts are fewer. Thus over each pier there may be a nich, in which to place a figure; and there may run a cornice the whole length on each side. This will be a very great article of elegance, and is supported by the antique. We have mentioned the ends of the transverse pieces, in some wooden Bridges, being brought out for purposes of strength and service, and have observed a great advantage they would have this way in resembling the modillions of a cornice; but in those of stone the cornice itself may be used with great propriety and beauty. We see it in the Arminian Bridge, and that was a work of the Augustan age, nay, of Augustus himself. It may not be amiss to trace in this Bridge, which is one of the most elegant remains of Roman work in its kind, their idea of proportions, which the architect must take care not to follow, unless where the circumstances are alike.

The Bridge has five arches, and the three middle ones are equal: the extent of each of these is twenty-five feet. The two others correspond from the opposite sides, and their measure is happily diminished by a fifth; they are twenty feet each. All the arches are perfect semicircles; and their piers are in diameter half the height of the great arches with a small surplus. These proportions we learn from this delicate remain, but this is not all we may learn from it.

In speaking before in general terms of making the piers, we have directed that they in general face the stream with a right angle. Those who have seen this in the most admired works have thought to improve the form by making it an acute angle; but in this the edge is weaker, and the whole too slight. The Romans knew what to attempt and where to stop; in this elegant Bridge, as in many, nay, we might almost say all the others of pure taste, the pier meets the stream in a right angle. Where the course of a river is rapid, subject to be swelled by floods, and furious in these conditions; the best method is to allow rather one large arch in the middle, than, as the elegant structure of which we just now spoke, three equal. The piers of these will break, disturb, and interrupt the course of the river, and the more the water is disturbed, the

more impetuous it becomes in all these instances. But in observing these instructions, let not the young architect run into excess: though there should be a considerable difference between the central and side arches in such a Bridge, yet this must not be in such extravagance as to render the side arches useless.

The decoration we proposed for a stone Bridge, has had place in this; niches remain over the piers, in which the emperor who built the Bridge placed statues of the heroes and the geniuses of the age; those who defended and adorned their country: but there succeeded ages like to ours, ages which, producing no more such men, looked on the memorials of valour and of wisdom as reproaches; and left for barbarism to destroy.

Of dividing the water. The main body of the river must be allowed to keep its course in the midst, and the great arch is designed to give it passage. But let our student look into nature, and he will see that wherever there is this violent force in the body of a stream, there is a rippling current also at the sides. This let him consider in the construction of the Bridge. As we propose the arches the course will be thus; the main body of the water with its full force will pour uninterrupted through the great arch, and these two smaller currents of the sides will also have their proportioned arches; they will be divided from the main current by the piers, and this without molestation or interruption; and as they run free, the main body will receive no change in its condition. This we propose, and this will be the case in a well constructed Bridge; and in this way even the furious body of the stream being undisturbed, will run off evenly. But if this direction be carried to excess, and the side arches be made very small, the consequence will be worse than if there were none such. In that case the body of water would only be too much huddled together: and in this it would be thus collected and distinct at the same time. These small arches would take their share, such as it was, while the river kept its common depth and bigness; but as it rose and swelled, they would be incapable of receiving or passing that due proportion: there would be all the conflict of disturbed and uninterrupted water at the piers; and the main body, increased by the addition of what should have gone off in these side streams, will be thrown into new fury and confusion, just at that place where all the labour of the architect should have been joined with all his skill to give it quickness; that is, under the main arch of the Bridge.

From these considerations, let him learn the necessity of a just division of the space and proportion of the arches; and if he would add example to the precept, let him examine from the practice of others in celebrated ages, and in the climes where his great science flourished, what suits the purpose.

We shall carry him back to Italy.

Over

Over the Bacchiglione, near the church of Saint Mary, is a Bridge of this kind: it is a mixed work, antique in part, but finished by a hand more modern. The river is such as we have described; the Bridge of three arches, and of these one is pure antient Roman, as are the piers of all. The river, full or low, rapid or calm, is carried with a happy freedom through these arches; and their proportion is this: the measure of the principal or central arch is thirty-two feet, that of the two others twenty two and a half. The piers are in thickness one sixth of the great arch.

Here the piers are strong enough not only to support all weights that may come over the Bridge, but they also resist the fury of the waves in the greatest floods; and while they stand the force of the torrent, do not too much interrupt its course: the whole bed of the river is divided as nature dictates into three parts, and the full quantity of the side currents being taken off, the great body which rolls along the midst moves freely.

Various circumstances may require that the architect alter these proportions; and he must comply with such necessity, only remembering, that as truth lies here, the less his deviations are, the better. Here is an instance of propriety, and we have selected it, because it is, more than others, adapted to a middle course of things, and to general use.

Of Bridges without decorations. In the erection of Bridges, as well as houses, without decoration, proportion will stand in the place of ornament: we shall see this very conspicuously in some of those old Bridges where their great builders designed strength, and had no thought of decorations. The Bridge over the Rerone at Vicenza, which, from its nearness to the flesh-market, has obtained the name of the Butcher's Bridge, is of this kind, and deserves to stand as a model in like circumstances for those built at the expence of the public, and intended only for real use.

In the more expensive and more decorated buildings, of whatever kind; the architect has the free scope for his fancy, and the means of greatest honour, but it is in the plain and simple kinds that he must use all his skill in the proportion; and these will never fail to give him equal credit in the eyes of the judicious. We named on this occasion the plain Vicenza Bridge, of which it is not in the intent of our work to give a figure, for what we propose are new designs; not the repetition of plates every traveller has rendered cheap and common. In this whereof we now speak there are, as in the preceding, three arches, a larger in the centre, and on each side of it a smaller; the compass of the arch is less than semicircular; and thence the Bridge is of easier ascent. To compensate for the want of strength in such an arch, the piers are solid and well wrought, and the buttments firm. These give all the needful addition of support. The pressure in those arches, which are less than of the semi-circular

circular form, is upon these buttments in some part, and they are thus prepared for it.

The measure of these arches is very happily calculated for such a service; and they may stand as a model to succeeding time; their duration shewing the truth of the construction. The two side arches rise one-third of their breadth above the impost; the rise of the middle one is somewhat less; and the thickness of the piers is one-fifth of the measure of the lesser arches.

We know this Bridge has stood two thousand years; and we have reason to admire its structure; but those who would have their works of the same kind last a like period, must more than admire, they must understand its construction.

The materials are not of the most lasting kind; for, though stone, it is a soft species; the truth of work has kept the whole together so many ages. This is what we neglect; this the Greeks, and this the Romans studied. Their stones were cut into vast masses, the utmost the quarry would afford without flaws; and however rough and unornamented the exterior part was left, their sides that joined were smoothed to a hair's truth. Their mortar might be very well said to have its temper from the labourers sweat; no toil, no time was spared to blend its parts. Thus were the materials prepared, and they were put together with equal labour: no art was omitted in connecting and uniting them; and thus accuracy and industry formed the whole so firm, as if the Bridge had been cut out of some mass, where there had been no flaw or grain in all the quantity.

Of more magnificent Bridges. The structure of these useful and noble parts of the architect's science having been thus laid down, we shall mention the buildings they may support, the uses of magnificence they may serve, and the honour the designer may attain by a noble and elevated imagination in their contrivance, where no price is spared.

We have observed, that they may receive streets and walks of resort; and in great cities no places could be fitter for that purpose. Their strength, when constructed according to these rules, admits of any superstructure: they are elevated, so that they have a better air than can be found in streets and squares; the water is open to them, and in hotter climates, the coolness it gives the air is highly pleasing: the vessels upon the river afford a view more agreeable to the mercantile world than all others; while the eye of sedate contemplation takes in the remote prospect from the height of the situation, and hears the murmur of the water from the piers that break it always in its course; though in our methods of construction it be not much.

From these advantages the genius of the great masters in the science has deduced vast splendor. We see Bridges spacious enough for the
greatest

greatest resort, and commodious as well as elegant; covered with buildings, adorned with trophies, and displaying to the eye all the elegancies of the superior orders. Palladio designed a Bridge of this kind where there ran three spacious streets composed in the principal or central of very considerable houses, and in the others which were narrower, only inferior to those of the first in size. The warehouse of merchants may with the greatest convenience be disposed in the principal street of such a Bridge, and shops along the others; all convenient, and all subservient to the principal design of rendering it a place of concourse. But there will require in such a design vast compasses for the width of the Bridge. We have seen very near home what great inconveniences may arise from want of breadth; and how ill houses are placed where precautions of this kind have not been taken. Galleries were intended on this Bridge in three places; at each head, and over the principal arch: this last for the resort of merchants; and it is not easy to say, with how much dignity and elegance such a plan might be constructed. This would have emulated the works of antient Rome, upon whose Elia Bridge there were originally galleries with columns of brass; and every ornament that happy period could devise to accompany them.

Such have been the designs of some whose genius of the later date has wanted nothing of the antient; but there has not appeared that patronage among the great, or spirit in the public, which should have countenanced and employed them in the same scope of an unbounded execution.

Draw-Bridge, is one made fast only at one end with hinges, so that the other end may be lifted up; in which case the Bridge stands upright, to prevent the passage of either ditch or moat. There are others made to draw back to hinder the passage, and to thrust over again to afford a passage; and others, which open in the middle, half of which turns away to one side, and the other half to the other; being joined again at pleasure: but they have this inconvenience, that one half of them remains on the enemy's side.

Flying-Bridge, is an appellation given to a Bridge made of pontoons, leather-boats, hollow beams, casks, or the like, laid on a river, and covered with planks, for the passage of an army: it more particularly denotes a Bridge composed of one or two boats joined together by a sort of flooring, and surrounded with a rail, or balustrade; having also one or more masts, to which is fastened a cable, supported, at proper distances, by boats, and extended to an anchor, to which the other end is fastened, in the middle of the water: by which contrivance, the Bridge becomes moveable, like a pendulum, from one side of the river to the other, without any other help than the rudder. Such Bridges sometimes also consist of two stories, for the quicker passage of a great number of men, or that both infantry and cavalry may pass at the same time.

A. a.

The.

The *Floating-Bridge*, is similar to the *Flying-bridge*, being ordinarily made of two small Bridges, laid one over the other, in such a manner, as that the uppermost stretches and runs out, by the help of certain cords running through pulleys placed along the sides of the under-bridge, which push it forward, till the end of it joins the place it is designed to be fixed on. When these two Bridges are stretched out to their full length, so that the two middle ends meet, they are not to be above four or five fathoms long; because, if longer, they will break.

Bridges of Boats, are either made of copper, tin, or wooden boats, fastened with stakes, or anchors, and laid over with planks. One of the most notable exploits of Julius Cæsar, was the expeditious making a Bridge of boats over the Rhine.

There are fine Bridges of boats at Beaucaire and Rouen, which rise and fall with the water, and one at Seville is said to exceed them both.

The Bridge of boats at Rouen, built in lieu of the stately stone Bridge erected there by the Romans, is represented by a modern writer as the wonder of the present age. It always floats, and rises and falls with the tide, or as the land waters fill the river. It is near three hundred yards long, and is paved with stone, just as the streets are; carriages with the greatest burdens go over it with ease, and men and horses with safety, though there are no rails on either side. The boats are very firm, and well moored with strong chains, and the whole well looked after, and constantly repaired, though now very old.

BROAD-STONE, is the same with free-stone; only this is so called, because raised broad and thin out of the quarries, viz. not more than two or three inches thick. The use of this sort of free-stones, which are called Broad Stones, is for paving court-yards and passages, and before shop-doors, as in walks or paths in the city of London, to separate them from the highway.

But some of these stones are cut into perfect squares, like paving tiles, but much larger, as eighteen, twenty, or twenty-four inches square or more; but as these are neater, so they are dearer.

BROW-POST, among builders, the beam that goes across the building.

BROWN (Spanish) is a dusky colour, with a reddish cast. It is an earth that is dug out of the ground. It is of great use among painters; being cheap and plentiful, and a colour that works well, if it be ground fine, which may be done with less labour, than some better colours require. That which is of the deepest colour, and the freest from stones is the best. The other sorts are not so good to give a colour to the eye, but yet they serve as well as any other for the priming colours, to season the wood to lay other colours upon.

BUFFET, a little apartment, separated from the rest of the room, by slender wooden columns for placing China and glass ware, &c. The Buffet among

among the Italians, called *Credenza*, is inclosed within a balustrade, elbow-high.

BUILDING, is used to signify the art of constructing and raising an edifice, in which sense it comprehends the expences, as well as the invention and execution of the design. In the art of Building, conveniency, firmness, and pleasure, are to be considered; and these Sir Henry Wotton considers under two heads, the situation, and the work.

As to the situation, either that of the whole is to be considered, or that of its parts. In the first, regard must be had to the quality, temperature, and salubrity of the air; to the quality of the soil; to the conveniency of water, fuel, carriage, &c. and to the agreeableness of prospect. As to the situation of the parts, the chief rooms, studies, and libraries, should lie towards the east; those offices which require heat, as kitchens, brew-houses, bake-houses, and distillations, towards the south; those that require a cool, fresh air, as cellars, pantries, and granaries, to the north; as also galleries for paintings, musæums, &c. which require a steady light. The ancient Greeks and Romans generally situated the fronts of their houses towards the south, but the modern Italians vary very much from this rule. And indeed it is absolutely necessary to have regard to the country, each being obliged to provide against its own inconveniences.

The simple forms of Building are either circular or angular. The circular form is very commodious, and the most capacious of any, strong, durable, and very beautiful; but is the most chargeable of all others, and much room is lost by the bending of the walls, when it comes to be divided into apartments; besides an ill distribution of the lights, unless it be from the center of the roof. For these reasons, the antients employed this form only in their temples and amphitheatres, which had no need of compartitions. As for angular forms, Building neither loves many nor few angles. The triangle is condemned above all others, as wanting both capaciousness and firmness, as also on account of its not being resolvable, in the internal partitions, into any other figure than its own. Buildings with five, six, or more angles, are more fit for fortifications than civil edifices. The rectangle, therefore, is generally chosen, as being a medium between the triangle, and the pentagon, &c. As to a mixed form, partly circular, and partly angular, a judgment may be made of them, from what has been already said of simple ones. Let the builder, however, remember not to lose sight of uniformity, while he is in pursuit of variety.

The accessories or ornaments of a Building are fetched from sculpture and painting. In the first, care ought to be taken that there be not too much of it, especially at the entrance; and that both in fine and coarse pieces

pieces of sculpture, and likewise in placing figures aloft, the rules of perspective be strictly observed.

In painting, the chief things to be regarded are, that the best pieces be placed in the best lights; and that they be suited to the intention of the rooms they are used in.

BULK-HEADS, in naval architecture, certain partitions built up in different parts of a ship, either across or lengthwise, to form and separate the various apartments.

BULLEN-NAILS, are a sort of Nails with round heads, and short shanks, lined and lacquered; there are several sizes of them. They are used in hanging rooms, setting up beds, covering of stools, chairs, couches, desks, coffins, &c.

BUST, or **BUSTO**, in sculpture, &c. the figure or portrait of a person in relievo, shewing only the head, shoulders, and stomach, the arms being lopped off: it is usually placed on a pedestal or console. Feliobien observes, that though in painting, one may say, a figure appears in Bust, yet it is not proper to say, in a Bust. The Bust is the same with that the Latins called *Herma*, from the Greek *Hermes*, Mercury, the image of that God being frequently represented in this manner by the Athenians. Bust is also used, especially by the Italians, for the trunk of a human body, from the neck to the hips.

BUTMENTS, are those supporters or props, on or against which the feet of arches rest. Also little places taken out of the yard or ground-plot of a house, for a butlery, scullery, &c.

BUTTERY, a room in the houses of noblemen and gentlemen belonging to the butler, where he deposits the utensils belonging to his office, as table-linnen, napkins, pots, tankards, glasses, salvers, &c.

As to its position, Sir Henry Wotton says, it ought to be placed on the north side of the building, which is designed for the offices. In England, it is generally near the cellar, viz. the room commonly on the top of the cellar stairs.

BUTTOCK, in naval architecture, the round parts of a ship behind, under the stern, terminated by the counter above, and the after-part of the bilge below.

BUTTRESS, a kind of butment built archwise, or a mass of stone, or brick, serving to prop or support the sides of a building wall, &c. on the outside, where it is either very high, or has any considerable load to sustain on the other side, as a bank of earth, &c. They are also used against the angles of steeples, and other buildings of stone, &c. on the outside, and along the walls of such buildings as have great and heavy roofs, which would be subject to thrust the walls out, if they were not thick, if no Buttresses were placed against them.

Buttress,

Buttresses, are also placed for a support and butment, against the feet of some arches, that are turned across great halls in old palaces, abbeys, &c. and generally at the head of stone buildings, when there are large crocket windows; and they are also placed for butments to the arches of these windows.

The theory and rules of *Buttresses* are one of the desiderata in architecture; but it is not improbable, but that a sagacious architect and mathematician, who would apply himself diligently to examine into the matter, might bring it within the bounds of reason and rules, whereby it might be known very near, of what size, and consequently what weight, a buttress or butment ought to be; which must be various, according to the dimensions and form of the arch, and the weight which is superincumbent on it.

As to the weight of the materials, both on the arch, and in the buttress or butment, it is not difficult to calculate. But it may probably be objected there may be a sensible difference to the strength and goodness of the buttress or butments.

Dr. Hock, professor of geometry in Gresham College, in his *Treatise of Helioscopes*, promised to publish something to the purpose abovementioned, but whether he did, I know not; but what he promised in that treatise, was as follows, viz. a true mathematical and mechanical form of all manner of arches, with the true butment necessary to each of them, a problem, says he, which no architectonic writer has ever yet attempted, much less performed. A treatise of this nature would be extremely useful, for the want of a certain rule in arching, with its necessary butment, has often proved the ruin of some structures, which have been of no inconsiderable expences, as bridges, &c.

C.

CABIN, in naval architecture, an apartment in a ship for any of the officers to eat, drink, and sleep in. The great Cabin is chiefly intended for the captain or principal officer; but there are besides these several of a smaller kind for the inferior officers. The bed-places of the sailors, if they are built up at the ship's-side between decks, which is often the case in the merchant ships, are likewise denominated Cabins.

CABINET, the most retired place in the finest apartment of a building, set apart for writing, studying, or preserving any thing that is curious or valuable. A complete apartment consists of a hall, anti-chamber, chamber, and Cabinet, with a gallery on one side. Hence we say a Cabinet of paintings, curiosities, &c.

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CABLING,

CABLING, the filling up the middle of a fluting in a column with something like a rope; hence the columns whose flutings are thus filled up are called columns with cabled flutings.

CALIBER, an instrument used by carpenters, joiners, and bricklayers, to see whether their work be well squared.

CALIDUCTS, a sort of pipes or canals, disposed along the walls of houses and apartments, used by the ancients for conveying heat to several remote parts of the house, from one common furnace.

CALOTTE, in architecture, a round cavity, or depresso, in the form of a cap or cup, lathed and plaistered, used to diminish the rise or elevation of a moderate chapel, cabinet, alcove, &c. which, without such an expedient, would be too high for other pieces of the apartment.

CALQUING, or **CALKING**, a term used in painting, &c. where the backside of any thing is covered with a black or red colour, and the strokes or lines traced through, on a waxed plate, wall, or other matter, by passing lightly over each stroke of the design with a point, which leaves an impression of the colour on the plate or wall.

CAMAIEU, also a term in painting when there is only one colour, the lights and shades being of gold, or on a golden and azure ground. It is chiefly used to represent basso relievos.

CAMBER-BEAM, a piece of timber in an edifice, cut arching, or arch-wise, or with an obtuse angle in the middle, commonly used in platforms, as church leads, and on other occasions, where long and strong beams are required. A Camber-Beam being much stronger than another of the same size, and being laid with the hollow side downwards, (as they generally are) they represent a kind of arch.

CAMBRING. The seamen say a deck lies Cambring, when it does not lie level, but higher in the middle, than at either end.

CAMES, the small slender rods of cast lead, of which the glaziers make their turned lead. For their lead being cast into slender rods, of twelve or fourteen inches in length, are called Comes; and sometimes they call each of these rods a Came, which, when it has been afterwards drawn through their vice, makes their turned lead.

CANT, a term used by some carpenters of a piece of timber; when it comes the wrong way in their work, they say, Cant it, *i. e.* turn it about.

CANTALIVERS, pieces of wood framed into the front or other sides of the house, to suspend the mouldings and caves over it. They seem, indeed, to be the same with modillions, except that the former are plain, and the latter carved: they are both a kind of cartouches, set at equal distances under the corona of the cornice of a building.

CANTONED, in architecture, is when the corner of a building is adorned with a pilaster, an angular column, rustic quoins, or any thing that projects beyond the wall.

CANT-

CANT-TIMBERS, in ship building, those timbers, or ribs of the ship which are situated afore and abaft, or at the two ends where the ship grows narrower below.

CAPITAL, (of caput. lat. the head) the uppermost part of a column or pilaster, serving as the head or crowning, placed immediately over the shaft, and under the entablature.

The Capital is the principal and essential part of an order of a column or pilaster, and is of a different form in different orders, becoming the distinguishing characteristic between them. Vitruvius tells us, that Gallimachus, an ingenious statuary of Athens, invented the first regular capital from the following accident. An Athenian old woman happening to place a basket covered with a square tile over the root of an acanthus, which grew on the grave of a young Corinthian lady, the plant shooting up the following spring, encompassed the basket all round, till meeting with the tile it curled back in a kind of scrolls. The above sculptor passing by, and observing it, executed a Capital on this plan, representing the tile by the abacus, the leaves of the acanthus by the scrolls, and the basket by the body of the Capital.

The Tuscan Capital is the most simple and unadorned of all the rest; its members or parts are four only, viz. an abacus; an ovolo or quarter round; a collarino or neck; and an astragal; the latter indeed properly belongs to the first or shaft. The character which distinguishes this Capital from the Doric, &c. is, that the abacus is square and quite plain, having no ogee or other moulding; and that there are no annulets under the ovolo. Authors, indeed, vary a little with regard to the Tuscan Capital.

The height of this Capital is the same with that of the base, viz. one module, or semi-diameter. Its projecture is equal to that of the bottom of the column, viz. five-eighths of the module.

The Doric Capital has three annulets, or little square members, underneath the ovolo, instead of the astragal in the Tuscan, besides the abacus, an ovolo and a neck, all which it has in common with the former; and a talon, cyma, or ogee, with a fillet over the abacus.

Vitruvius makes the height of this Capital equal to half the diameter of the column below; and this height being divided into three parts; the first goes to the neck, the second to the bouldin, and the third to the uppermost part of the Capital.

The Ionic Capital is composed of three parts; an abacus, consisting of an ogee; under this a rind, which produces the volutes or scrolls, the most essential parts of this Capital; and at the bottom an ovolo or quarter round. The astragal under the ovolo belongs to the shaft: the middle part is called the rind or bark, from its supposed resemblance to the bark of a tree, laid on a vase, whose brim is represented by the ovolo, and
seeming

seeming to have been shrunk up in drying, and to have been twisted into the volutes. The ovolo is adorned with eggs, as they are sometimes called from their oval form.

The height of this Capital, according to M. Perault, is eighteen minutes, and its projecture one module seven tenths.

The Corinthian Capital is the richest of all the orders, and imputed to Callimachus, an Athenian statuary as we have already observed. It is adorned with eight volutes, a double row of leaves, and eight scrolls, situated round a body called by some campana, or bell, and by others tambour, or drum.

The height of this Capital is two modules and one third, and its projecture one module and one third.

The Composite Capital is an invention of the Romans, and is composed of the double row of leaves in the Corinthian, and volutes in the Ionic.

The height of this Capital is two modules and one third, and the projecture one module and two thirds.

Attic Capital, that which has leaves of partition in the gorge.

Angular Capital, that which supports the return of an entablature, at the corner of a projecture of a frontispiece.

Capital of a balluster, that part which crowns a balluster, resembling sometimes the Capital of some order, generally the Ionic.

Capital of a triglyph, the plat-band over the triglyph, called by Vitruvius *tœnia*. It is sometimes a triglyph, and performs the Office of a Capital to the Doric pilaster.

Capital of a nich, a kind of small canopy made over a shallow nich, to cover a statue.

Capital of a lantern, a covering, sometimes of one form, and sometimes of another, which finishes the lantern of a dome.

Capital of a bastion, a line drawn from the point of the bastion to the angle of the polygon; or from the point of the bastion to the middle of the gorge.

CAPSTAN, or CAPSTERN, in naval architecture, a strong massy piece of timber let down through the decks of a ship, and resting its foot, or axis, which is shod with iron, in an iron socket, called a saucer, which is fixed on a wooden block or standard, called the step, resting on the beams. There are usually two Capsterns: they are used to heave the anchors up to the ship; to draw up or let down the top mast or any other weighty body; or to heave any great strain in a level direction, as drawing the ship forward or backward, &c.

CARACOL, a term sometimes used for a stair-case, in a helix, or spiral form.

CASE, the shell or ribs of a house, containing the partitions, floors and rafters, made by carpenters; or it is the timber work, or, as it were, the

the skeleton of a house, before it is lathed and plaistered ; it is otherwise called the framing.

CARINA, a term used in antient architecture, a name given by the Romans to all buildings in the form of a ship, (from Carina, the keel of a ship) as we still use the word nave for navis, a ship, the middle or principal vault of our churches, because it has that figure.

CARPENTRY, the art of cutting, framing, and joining wood for the use of building. It is one of the arts subservient to architecture, and is divided into house carpentry and ship-carpentry : the first is employed in raising, roofing, flooring of houses, &c. and the second of the building of ships, &c. The rules in Carpentry are much the same with those of joinery ; the only difference is, that Carpentry is used in the larger coarser work, and joinery in the smaller and more curious.

There are very few regulations contained in the late act passed in the 14th of George III. respecting carpenters work ; the directions are short, and are as follow :

Timber partitions between building, and building that was erected, or begun to be erected before the passing of the act, may remain till one of the adjoining houses is rebuilt, or till one of the fronts, or two-thirds of such fronts, which abutt on such timber partition, is taken down to the bressummer or one pair of stairs floor, and rebuilt.

No timber whatever is at any time hereafter to be laid into any party-arch, other than for bond to the same. Nor into any party-wall other than for bond, &c. and the ends of the principal timbers to the floors and roof.

But no timber bearer to wood stairs, where an old party-wall has been cut into for that purpose, must be laid nearer than eight inches and an half to any chimney or flue whatever, or nearer than four inches to the internal finishing of the building adjoining.

No timber to be laid in any oven, copper, stove, still, boiler, or furnace, nor within two feet of the inside thereof.

No timber whatever to be laid nearer than nine inches to the opening of any chimney.

Nor nearer than five inches to any flue of a chimney, oven, stove, copper, still, boiler, or furnace. Or nearer than nine inches, if such timber is placed nearer than five feet of the mouth of the same respectively.

No timber to be laid under any hearth to a chimney, nearer than eighteen inches to the upper surface of such hearth.

No timber whatever to be laid nearer than eighteen inches to any door of communication through party-walls between ware-houses or stables.

All wood-work whatever, against any breast, back or flue, of any chimney, must be fixed by iron nails or hold-fasts, and not to be drove more

than three inches into the wall, or nearer than four inches to the inside of the opening of any chimney.

Bressummers, story-posts, and plates thereto, are only allowed in the ground story, and may stand fair with the outside face of the wall, but to go no deeper than two inches into a party-wall, nor nearer than seven inches to the center of a party-wall where it is two bricks thick, nor nearer than four inches and an half, if such party-wall does not exceed one brick and an half in thickness.

All window frames, and door-frames to the first, second, third, and fourth rate, must be recessed in four inch reveals at least.

Door-cases, and doors, to ware-houses only, as shall be of the first, second, third, or fourth rate, may stand fair with the outward face of the wall.

Every corner story-post, which is fixed for the support of two fronts must be of oak or stone, at least twelve inches square.

No external decoration whatever to be of wood, except as follows : cornices, or dressings to shop-windows, frontispieces to door-ways, of the second, third, and fourth rate ; covered-ways, or porticos to a building, but not to project before the original line of the houses in any street, or way, and which covered-ways or porticos, must be covered with stone, lead, copper, slate, tile or tin.

N. B. No such covered-way, or the cornice to any shop-windows, nor the roof of any portico, is to be higher than the underside of the sill to the windows of the one pair of stairs floor.

All other external decorations whatever to the first, second, third, and fourth rate, are to be of stone, brick, artificial stone, stucco, lead or iron.

Every flat gutter and roof, and every turret, dormer, and lantern light, or other erection, placed on the flat, or roof of any building of the first, second, third, fourth, and also the fifth rate, must be covered with glass, copper, lead, tin, slate, tile, or artificial stone.

No dripping eaves to be made next any public way, to any roof of the first, second, third, or fourth rate, except from the roofs of porticos or other entrances.

Wood-trunks are not to be higher from the ground than to the tops of the windows of the ground story, the pipes from thence upwards, must be of lead, copper, tin, or iron, and may discharge the water into channel-stones, on or below the surface of the ground. Or the wood-trunks may be continued down below the surface of the ground into drains, &c. or into brick or stone funnels, and such funnels must in every part thereof be below the surface of the foot pavement.

This building-act, however, extends only to the bills of mortality, and the parishes of St. Mary-le-bone, Paddington, St. Pancras, and St. Luke at Chelsea.

CARTON,

CARTON, or **CARTOON**, in painting, a design drawn on strong paper, to be afterwards calked through, and transferred on the fresh plaster of a wall to be painted in fresco. Carton is also used for a design coloured, for working in mosaic, tapestry, &c. The Cartons which were formerly at Hampton Court, but now at the queen's palace, are designs of Raphael Urbin, intended for tapestry.

CARTOUCHE, an ornament representing a scroll of paper. It is usually a flat member, with wavings, to represent some inscription, device, cypher, or ornaments of armoury. They are in architecture, much the same as modillions; only these are set under the cornice in wainscoting, and those under the cornice at the eaves of a house.

CARYATIDES, or **CARIATES**, (so called from the Caryatides, a people of Caria) are in architecture, a kind of order of columns or pilasters, under the figures of women dressed in long robes, after the manner of the Carian people, and serving instead of columns to support the entablement.

Vitruvius relates the origin of the Caryatides. He observes, that the Greeks having taken the city of Caria, led away their women captives; and to perpetuate their servitude, represented them in their buildings as charged with burdens, such as those supported with columns. M. Le Clerc aptly enough calls these symbolical columns, and tells us, that the antient Greeks had a custom, in the columns of their public buildings, to add figures and representations of the enemies they had subdued, to preserve the memory of their victories. That they having reduced the rebellious Carians to obedience, and led away their wives captives; and that the Lacedemonians having vanquished the Persians at Plataea, they were the first subjects of these columns; which have preserved to late posterity both the glory of the conquerors, and the dishonour of the conquered. And hence originally came the names Caryatides, and Persian columns; which names have been since applied to all columns made in human figures, though with characters very different from each other.

M. Le Clerc likewise observes, that the Caryatides are not now represented among us, as they were among the antients, viz. as subjects of servitude and slavery, with hands tied before and behind, such characters seeming injurious to the fair sex; and for that reason we give them others entirely opposite, never using them in building but as singular beauties, and such as make the greatest ornament thereof. Among us, they are represented under the noble symbols, or images of Justice, Prudence, Temperance, &c.

The Caryates should always have their legs pretty close to each other, and even across, or the one athwart the other, their arms laid flat to their bodies, or to the head, or as little spread as possible; that as they do the office of columns, they may as near as possible bear the figures of them. When the Caryatides are insulated, they should never have any great weight

weight to support, nor greater than those of balconies, little galleries, or slight crownings, and their entablature and pedestal are not to be thought so proper to bear great loads. If the Caryatides have a projecture beyond the wall, in the manner of pilasters, they may be used in the architecture of a gallery or salon, provided they may be not made to sustain any thing but an entablature, the weight of the vault being borne by the wall behind, which serves them as a ground or bottom.

The Caryatides ought always to appear in characters proper to the places they are used in. For instance, those which support the crowning of a throne, should be symbols, or representations of heroic virtues. Those which are set in a place of devotion, should bear the characters of religion, and those in halls and banqueting-rooms, should carry the marks of mirth and rejoicing.

Caryatides, and common columns, should never be used together under the same entablature; for besides that, there can never be a just symmetry between them. The figures of women, as tall as common columns, would appear monstrous, and make all the rest of the architecture appear low and mean. Again, the Caryatides should never be made of an immoderate stature; lest being too large, they might become frightful to ladies; and for this reason, one would chuse to confine them sometimes under the impost of a portico, such imposts serving them for an entablature. They may also upon occasion be raised upon pedestals, which ought not to be lower than one third of their height: and besides this, if there be consoles placed over their heads, the figures may be made of a reasonable height.

Sometimes the arms of the Caryatides are cut off for the greater delicacy, as those for instance in the halls of the Swits guards in the Louvre. But M. Le Clerc does not approve of such mutilations. These kinds of mutilations, which are only used to make the figures more light and delicate, or rather to make them more conformable to the columns, are only proper for termini, or forms, which are a kind of half human figures, seeming to proceed out of a vagina or sheath.

The Caryatides are sometimes represented in the form of angles; which, M. Le Clerc is of opinion, should not be, except at baldaquins, and altars. And such as do appear under that holy form, ought, in his opinion, to support the entablature with their hands; or, as others say, with their heads, as bearing it easily and without trouble. The entablature supported by angels, M. Le Clerc would have to be of the Corinthian order; and that by the virtues of the Ionic; and both the one and the other somewhat less massive than the ordinary. The antients made the Caryatides frequently to support corbels, or baskets of flowers; and these they call *Caniferæ* and *Cistiteræ*.

CASEMENT,

CASING of timber-work, is the plaistering a house all over on the outside with mortar, and then striking it wet by a ruler, with the corner of a trowel, or the like instrument, to make it resemble the joints of free-stone; by which means the whole house appears as if built thereof.

As to the method of doing it: some direct it to be done upon heart-laths; because that the mortar would in a little time decay sap-laths: and although it will require more labour to lath it with heart, than with sap-laths, yet it will be better for the mortar to hang to, because heart-laths are the narrowest; and laths ought to be closer together for mortar, than for loam. They also say, that they commonly lay it on in two thicknesses, viz. a second before the first is dry.

CASEMENT, a name given by some workmen to the scotia, or hollow moulding between the two torus's in the base of columns: which some architects make one sixth of a circle, and others one fourth. The same word in its common sense expresses the opening of a window; and in military architecture a vault of masons-work in that part of the flank of the bastion next the curtain.

CASTING, among sculptors, the taking casts of impressions, of figures, busts, metals, leaves, &c.

The method of taking of casts of figures and busts, as at present practised, is most generally by the use of plaister of Paris, or, in other words, alabaster calcined by a gentle heat. The advantage of using this substance preferably to others, consists in this, that notwithstanding a slight calcination reduces it to a pulverine state, it becomes again a tenacious and cohering body, by being moistened with water, and afterwards suffered to dry; by which means either a concave or a convex figure may be given by a proper mould or model to it when wet, and retained by the hardness it acquires when dry: and from these qualities, it is fitted to the double use of making both casts and moulds for forming those casts. The plaister is to be had ready prepared of those who make it their business to sell it; and the only care is to see that it is genuine. The particular manner of making casts depends on the form of the subject to be taken. When there are no projecting parts, it is very simple and easy: as likewise where there are such as form only a right, or any greater angle with the principal surface of the body: but where parts project in lesser angles, or form a curve inclined towards the principal surface of the body, the work is more difficult.

The first step to be taken is the forming the mould; which is, indeed, done by much the same means as the cast is afterwards made in it. In order to this, if the original or model be a bas relief, or any other piece of a flat form, having its surface first well greased, it must be placed on a proper table, or other such support, and surrounded by a frame, the sides of which must be at such a distance from it, as will allow a proper

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thickness

thickness for the sides of the mould. A due quantity of the plaister, that is, what will be sufficient to cover and rise to such a thickness as may give sufficient strength to the mould, as also to fill the hollow betwixt the frame and the model, must be moistened with water, till it be just of such consistence as will allow it to be poured upon the model, which should be done as soon as possible: for it must not be delayed after the water is added to the plaister, which would otherwise concrete or set, so as to become more troublesome in the working, or unfit to be used. The whole must then be suffered to remain in this condition, till the plaister has attained its hardness; and then the frame being taken away, the preparatory cast or mould thus formed, may be taken off from the subject entire.

Where the model or original subject is of a round or erect form, a different method must be pursued; and the mould must be divided into several pieces: or if the subject consists of detached and projecting parts, it is frequently most expedient to cast such parts separately; and afterwards join them together.

Where the original subject or model forms a round, or spheroid, or any part of such round or spheroid, more than one half the plaister must be used without any frame to keep it round the model; and must be tempered with water, to such a consistence, that it may be wrought with the hand like very soft paste: but though it must not be so fluid as when prepared for flat figured models, it must be as moist as is compatible with its cohering sufficiently to hold together: and being thus prepared, it must be put upon the model, and compressed with the hand, or any flat instrument, that the parts of it may adapt themselves, in the most perfect manner, to those of the subject, as well as be compact with respect to themselves.

When the model is so covered to a convenient thickness, the whole must be left at rest till the plaister be set and firm, so as to bear dividing without falling to pieces, or being liable to be put out of its form by slight or violence; and it must then be divided into pieces, in order to its being taken off from the model, by cutting it with a knife with a very thin blade; and being divided must be cautiously taken off, and kept till dry: but it must be always carefully observed, before the separation of the parts be made, to notch them cross the joints, or lines of the division, at proper distances, that they may with ease and certainty be properly conjoined together: which would be much more precarious and troublesome without such directive marks. The art of properly dividing the moulds, in order to make them separate from the model, constitutes the greatest object of dexterity and skill in the art of casting; and does not admit of rules for the most advantageous conduct of it in every case. But we shall endeavour to explain the principles on which it depends, in such a manner, that by a due application of them, all difficulties may at any time be surmounted,

mounted, and an expertness, even of manner, acquired by a little practice. With respect to the case in question, where the subject is of a round or spheroidal form, it is best to divide the mould into three parts, which will then easily come off from the model : and the same will hold good of a cylinder, or any regular curve figure.

The mould being thus formed, and dry, and the parts put together, it must be first greased, and placed in such a position, that the hollow may lie upwards, and then filled with plaister, commixt with water, in the same proportion and manner as was directed for the casting the mould; and when the cast is perfectly set, and dry, it must be taken out of the mould and repaired, where it is necessary; which finishes the whole operation. This is all that is required with respect to subjects where the surfaces have the regularity above-mentioned : but where they form curves, which intersect each other, the conduct of the operation must be varied with respect to the manner of taking the cast of the mould from the subject or model; and where there are long projecting parts, such as legs or arms, they should, as was observed before, be wrought in several casts. In the same manner figures, busts, &c. may be cast of lead, or any other metal, in the moulds of plaister : only the expence of plaister, and tediousness of its becoming sufficiently dry, when in a very large mass, to bear the heat of melted metal, render the use of clay, compounded with some other proper materials, preferable where large subjects are in question.

Casts of medals, or such small pieces as are of a similar form, may be made in plaister, by the method directed for bass relievos. Indeed there is nothing more required than to form a mould by laying them on a proper board; and having surrounded them by a rim made of a piece of card, or any other paste-board, to fill the rim with soft tempered plaister of Paris; which mould, when dry, will serve for several casts. It is nevertheless a better method to form the mould of melted sulphur; which will produce a sharper impression in the cast, and be more durable than those made of plaister. The casts of medals are frequently made of sulphur, which being melted, must be treated exactly in the same manner as the plaister. Casts may be made likewise with iron with very little additional trouble, provided it be prepared in the following manner.

“ Take any iron bar, or piece of a similar form; and having heated it red hot, hold it over a vessel containing water, and touch it very slightly with a roll of sulphur, which will immediately dissolve it, and make it fall in drops into the water under it. As much iron as may be wanted being thus dissolved, pour the water out of the vessel; and pick out the drops formed by the melted iron from those of the sulphur, which contain little or no iron, and will be distinguishable from the other by their colour and weight.”

The iron will, by this means, be rendered so fusible, or easy to be melted, that it will run with less heat than will melt lead, and may be employed for making casts of medals, and many other such purposes, with great convenience and advantage.

CASTING in joinery, &c. Wood is said to cast or warp, when either by its own drought, or moisture of the air, or other accidents, it shoots or shrinks, and alters its flatness and straightness and becomes crooked.

CATACOMB, a grotto or subterraneous place for the interment of the dead. The term is particularly used in Italy for a vast assemblage of subterraneous sepulchres three leagues from Rome, in the Via Appia, supposed to be the sepulchres of the antients. Each Catacomb is three feet broad, and eight or ten high, running in the form of an alley or gallery, and communicating with each other.

CATADROME, an engine like a crane, used by builders in raising weights.

CAT-HEAD, in naval architecture, a large square piece of timber; one end of which is fastened upon the fore-castle, and the other end projects without the bow, so far as to keep the anchor clear of the ship when it is drawing up by a tackle.

CATHETUS, in architecture, a perpendicular line, supposed to pass through the middle of a cylindrical body, as a baluster column, &c. In the Ionic capital, the Cathetus is a perpendicular line passing through the middle of the eye of the volute.

CAVAZION, or **CAVASION**, in architecture, the hollow trench made for laying the foundation of a building, which, according to Palladio, ought to be one sixth part of the height of the whole building.

CAVETTO, a hollow member or round concave moulding, containing a quadrant of a circle. It is used as an ornament in cornices. Mr. Zelibien takes notice, that workmen confound the Cavetto with scotia, but the Cavetto is only half a scotia. When it is in its natural situation, it is by workmen frequently called gula or guele, or mouth, in English; and when inverted, gorge or throat.

CAULICOLES, or **CAULICOLI**, eight lesser branches or stalks, in the Corinthian capital, springing out from the four greater or principal cauls, or stalks. The eight volutes of this order are sustained by four cauls or primary branches of leaves, from which the Caulicoles or lesser foliage arise. Some authors confound these with the volutes themselves; some with the helices in the middle; and some with the principal stalks whence they arise. Some define them to be carved scrolls, under the abacus, in the Corinthian capital.

CAULKING, in naval architecture, the act of driving a quantity of oakum, i. e. old ropes untwisted and softened into the seams of the planks, or between them where they are joined, in order to keep out the water;

water : after the oakum is driven very hard into these seams, it is covered with hot melted pitch, to prevent the water from rotting it.

CAUSEWAY, or **CAUSEY**, a massive body of stones, stakes, and fascines ; or an elevation of that viscous earth, well beaten ; serving either as a road in wet marshy places, or as a mole to retain the waters of a pond, or prevent a river from overflowing the lower grounds.

CELL, *Cella*, a little apartment or chamber, such as those wherein the ancient monks, solitaries, and hermits, lived in retirement. The hall wherein the Roman conclave is held, is divided by partitions into divers Cells for the several cardinals to lodge in.

CELLAR, the lowest room in a house, the cieling of which is level with the surface of the ground on which the house stands, or at most but very little higher. As to the situation of Cellars, Sir Henry Wotton says, they ought, unless the whole house be cellared, to be situated on the north-side of the house, as requiring cool and fresh air.

Cellars are usually dug by the solid yard, which contains twenty seven solid feet ; and therefore the length, breadth, and depth being multiplied together, and the product divided by twenty-seven, the quotient will give the content in solid yards.

CEMENT, or **CÆMENT**, in a general sense, any glutinous substance capable of uniting and keeping things together in close cohesion.

Cement, in architecture, a strong sort of mortar, used to bind or fix bricks or stones together, for some kind of mouldings ; or in cementing a block of bricks ; for the carving of capitals, scrolls, or the like. It is of two sorts, one called hot Cement, and the other cold Cement ; because the hot Cement is made and used with fire ; and the cold Cement is made and used without fire.

To make the hot Cement, take of bees-wax two pound, and of resin one pound ; mix them, and add one pound and a half of the same powdered, as the body to be cemented is composed of, throwing it into the melted mixture, and stirring them well together ; and afterwards kneading the mass in water, that the powder may be thoroughly incorporated with the wax and resin. The proportion of the powdered matter may be varied, where required, in order to bring the Cement nearer to the colour of the body on which it is employed.

This which forms an excellent strong Cement, must be heated when applied ; as must also the parts of the subject to be cemented together ; and care must be taken likewise that they are thoroughly dry. Where a great quantity of Cement is wanted for coarser uses, the coal-ash mortar, or Welch terras, as it is called, is the cheapest and best, and will hold extremely well, not only where it is constantly kept wet, or dry ; but even where it is sometimes dry, and at other times wet ; but where it is liable to be exposed to wet and frost, it should, at its being laid on, be

suffered to dry thoroughly before any moisture can have access to it ; and, in that case, it will likewise be a great improvement to temper it with the blood of any beast. This mortar, or Welsh terras, must be formed of one part lime, and two parts of well sifted coal-ashes ; and they must be thoroughly mixed by being beaten together ; for on the perfect mixture of the ingredients, the goodness of the composition depends.

Where the Cement is to remain continually under water, the true terras is commonly used, and will very well answer the purpose. It may be formed of two parts of lime, and one part of plaister of Paris, which should be thoroughly well beaten together, and then used immediately.

For the fixing shells, and other such nice purposes, putty is most generally used ; but it may be formed of quick lime and drying oil, mixed with an equal quantity of linseed oil ; or, where the drying quicker is not necessary, it may be made with lime and crude linseed oil ; without the drying oil.

Resin, pitch, and brick-dust, in equal parts, melted together and used hot, are much the cheapest Cement for shell work, and will perform that office very well, provided the bodies they are to join together be perfectly dry when they are used.

The cold Cement is less used, and is reckoned a secret known but to few bricklayers. It is made after the following manner.

Take a pound of old Cheshire cheese, pare off the rind and throw it by, then cut or grate the cheese very small, put it into a pot with a quart of cow's milk ; let it stand all night, and in the morning, take the whites of twenty-four or thirty eggs, and a pound of the best unslacked or quick lime, and beat it in a mortar to a very fine powder, sift it in a fine hair sieve, put the cheese and milk to it in a pan, or bowl, and stir them well together with a trowel, or such like thing, breaking the knobs of the cheese, if there be any, then add the whites of eggs, and temper all well together, and it will be fit for use. The Cement will be of a white colour ; but if you will have it of the colour of brick, put into it either some very fine brick-dust, or some almeagram, just sufficient to give it a colour.

CHAMBER, in a house or building, any room situate between the lowermost, excepting cellars, and the uppermost rooms. So that there are in some houses two, in others three or more stories of Chambers. Sir Henry Wotton directs, that the principal Chambers for pleasantness be situated towards the east

As to the proportions : the length of a well proportioned lodging should be the breadth and half of the same, or some small matter less, but should never exceed that length. As for the height, three-fourths of the breadth will be a proper height. Palladio directs, that Chambers, anti-chambers and halls, either flat or arched, should be made of the following

following heights. If they are flat, he advises to divide the breadth into three parts, and to take two of them for the height of the story from the floor to the joist.

In the building of Chambers, regard ought to be had to the place of the bed, which is usually six or seven feet square; and the passage, as well as to the situation of the chimney, which, for this consideration, ought not to be placed just in the middle, but distant from it about two feet, or two feet and a half, in order to make room for the bed; and by this means the inequality is hardly discerned, if it be not in buildings of the breadth at least of twenty-four feet within the work; in this case, it may be placed exactly in the middle.

CHANCEL, a part of the fabric of a Christian church, between the altar and ballustrade that incloses it, where the minister is placed at the celebration of the holy communion.

CHANDEFLIER, in military architecture, a kind of moveable parapet, consisting of a wooden frame, made of two upright stakes, about six feet high, with cross planks between them; serving to support fascines to cover the pioneers. The Chandeliers differ from blinds only in this, that the former cover the men only before, and the latter cover them also above. They are used in approaches, galleries, and mines, to hinder the workmen from being driven from their stations.

CHANNEL, in architecture, that part of the Ionic capital under the abacus, and lies open upon the echinus or eggs, which has the centers or turnings on every side to make the volutes.

Channel of the Larmier, the soffit of a cornice which makes the pendant mouchette.

Channel of the Volute, in the Ionic capital, the face of the circumvolution inclosed by a listel.

CHANTLATE, in building, a piece of wood fastened near the ends of the rafters, and projecting beyond the wall to support two or three rows of tiles, so placed, to hinder the rain water from trickling down the sides of the walls.

CHAPLET, in architecture, a small ornament carved into round beads, pearls, olives, and pater-nosters, which is frequently done in banquettes.

CHARGE or OVERCHARGE, in painting, an exaggerated representation of any person, wherein the likeness is preserved, but withal ridiculed: few painters have the genius to succeed in these Charges. The method is, to pick out and heighten something amiss in the face, whether by way of defect or redundancy; thus, if nature has given a man a nose a little larger than ordinary, the painter falls in with her, and makes the nose extravagantly long; and so in other cases. This is also called caricature.

CHARNEL, or CHARNEL-HOUSE, a kind of portico, or gallery, usually in or near a church-yard, over which were anciently laid the bones of the dead,

dead, after the flesh was wholly consumed. Charnel-houses are now usually adjoining to the church.

CHESNUT. The Horse-Chestnut, says a certain author, ought to be universally propagated, being easily increased from layers, and grows in large standards, bearing a most excellent flower; it is much used for avenues in France, and was brought into these parts of Europe from Turkey, and has been raised from nuts brought from thence; which grow well with us, and in time to fair large trees, full of boughs and branches, green-leaved, and streaked on the edges; with threads in the middle, that in their native country turn to Chestnuts, but rarely with us. It is valued for the fair green leaves and flowers; and for want of nuts is propagated by suckers: its name comes from the property of the nuts, which in Turkey are given to horses for their provender, to cure such as have coughs, or are broken-winded.

Mr. Chomel says, that nothing seems to him more agreeable, or that would bring more profit to a country, than Chestnuts planted in rows, well managed, and kept in good order; which would not only be pleasing to the eye, but the flower would be agreeable to the smell, and the taste in time will also be gratified. These trees are of quick growth, they shoot up in a little time, and their leaves, which are very beautiful, will form a shade, which will invite people to retire under them. In some places he tells us, that Chestnut-trees grow like oaks, and make forest-trees; they likewise plant them at a full distance one from the other, like young oaks for coppice and underwood; but this is seldom done, as they are not good for burning, on account of their crackling in the fire, and their aptness to burn the cloaths of those who sit near it.

As to the particular uses of Chestnut-timber, they are next to the oak, most covered by carpenters and joiners; and formerly most of our houses in London were built of it, there having been a large forest of them not far from this city in the reign of king Henry.

It makes the best stakes and poles for pallisadoes, pediments for vine props and hops; it is also proper for mill-timber and water-works. It is so prevalent against cold, that Chestnut-trees defend other plantations from the injuries of the severest frosts.

The Chestnut-tree is also proper for columns, tables, chests, chairs, stools, bedsteads, and wine-casks, and those for other liquors, giving the liquor the least tincture of the wood of any whatsoever, and having been dipped in scalding oil, or well pitched, is very durable. It will look fair without, indeed, when rotten within; however, the beams give warning of a fall of a house by their cracking. The coals of this wood are excellent for the smith, soon kindled, and as soon quenched.

CHEVAUX DE FRISE, a large joist or piece of timber, about a foot in diameter, and ten or twelve feet in length; into the sides of which are driven

driven a great number of wooden pins, about six feet long, armed with iron points, and crossing one another. The chief use of the Chevaux de Frise, is to stop up breaches, or to secure the avenues of a camp, from the inroads both of horse and foot. It is sometimes also mounted on wheels, with artificial fires, to roll down in an assault.

CHIMNEY, that part of a house where the fire is made, having a funnel to carry away the smoke.

In most things relating to building, we may refer the modern architect to the practice of the ancients for models from which to work, and examples by which to improve; but in this matter of Chimnies we have not that resource. The accounts the ancients give of them in their writings are short and trivial; and the rules of Vitruvius for constructing them are full of obscurity. Indeed they were less acquainted with them, because they had less necessity for them; they lived in a warmer country than ours, and they had the use of stoves; so that the construction of Chimnies was little regarded. With us the necessity of them is absolute, and the inconveniences that frequently attend them are so great, that nothing more essentially regards the profession of the architect, than their proper construction and disposition.

Fires are necessary, and we wish the smoke to pass free away: in this the effect of the wind is very great; and to be secure of every advantage in that respect, the builder is to have the danger of smoke in his eye from the first disposition of the building. Let him consider first the nature of the region, and from what quarter the winds most frequently blow, or most furiously: and let him, according to this consideration, dispose the rooms that shall have most need of fires in places where these winds have least power. This is much earlier than builders usually begin their provision against smoaky Chimnies; but their not taking the precaution in time is one of the principal reasons why the fault is so difficult to be remedied. He who shall have begun thus can have only the ill construction of a Chimney to combat with in the attempt of remedying an error; he who has neglected it may have the disposition of it, which is often impossible to alter.

The common causes of smoaking are either that the wind is too much let in above at the mouth of the shaft, or the smoke is stifled below; and sometimes a higher building, or a great elevation of the ground behind is the source of the mischief. Finally, the room in which the Chimney is, may be so little or close, that there is not a sufficient current of air to drive up the smoke. When the architect has thus acquainted himself with the several causes of the smoaking of Chimnies, he will know by what means he may most rationally obviate such inconveniences; and how he may remedy the accident, where in spite of all his care it shall happen: when the cause is not considered, this is impossible, and it is no un-

common thing to see much labour bestowed perfectly in vain, because the fault is misunderstood.

As smoaking is the greatest inconvenience that can attend this part of architecture, we have set out in this place with its causes; these we shall now caution the architect to obviate by a proper disposition and proportion of his rooms, and a judicious construction of the Chimney itself. We have seen, that the two great causes of the inconvenience are the smoak's being driven back, or lingering in the funnel: the driving back is an accident from without; the lingering in the funnel is from some error within, either in the construction of the funnel itself, or of the room where the Chimney stands.

The Chimney may be divided into two parts, the first containing the opening, the hearth, and the funnel; the other the jaumbs or sides, the mantle-piece which rests upon them, and what is called the Chimney-piece, which comes over the mouth. This is the common distinction, and according to this, the first part is what concerns us, the rest ornament.

Much depends upon the opening; if this be too small and low, the smoak of itself naturally is checked at the first setting out, and missing its way, returns into the room; and on the contrary, if it be too large and high, the same happens, because if there be too much room for the air and wind, the smoak will by that be driven into the room. The proportions of Chimnies we shall give hereafter, when we treat of their ornamental parts, and the rooms in which they are to stand; here we are enquiring only into their general structure. The mouth of the Chimney, or that part which joins the back, should be something smaller than the rest; for this will make a stop against the smoak, when it shall be coming down into the room; and meeting with that resistance, it will of course return back: indeed the making the tunnel narrowest at bottom is a very great article in the preventing smoaking, because it assists doubly; the smoak getting the easier up, as the space is all the way wider, and coming down with more difficulty as it grows narrower. Yet this prudent caution must not be carried to an extreme, because then the smoak will linger in the upper part, and all the force of the draught below will not be sufficient to send it up.

Another very good method to assist the discharge of the smoak is the making two holes one over another in each side of the Chimney; one of these is to go sloping upwards, and the other sloping downwards, so that the smoak will always find way through one of them. The placing a moveable vane at the top of the Chimney is also often successful; this keeps the opening of the funnel screened against the efforts of the wind, let that blow which way it will. To these we may add two other contrivances more ingenious than useful; the one is the carrying up the funnel spiral, to prevent the easy descent of the smoak; and the other the hanging

hanging the æolipile in the lower part of the Chimney, to drive it up by blowing. This æolipile is a hollow ball of brass filled with water, with a small opening in one part; this being hung up just over the flame, blows forcibly out at the hole as the water heats.

These are the several methods commonly used for the remedying as well as preventing the smoaking of Chimnies; but let the judicious architect proceed upon the most certain principles in obviating the danger. Let him observe a due proportion between the size of the room and that of the Chimney; let him be careful to place the doors in such a manner, that they may most favour the carrying up of the smoke, and to give the sides a proper projection, and the back a due distance.

Chimney hooks, are hooks of steel and brass, put into the jaumbs of Chimnies, into each jaumb one, for the handle of the fire-tongs and fire pan to rest in.

Chimney jaumbs, are the sides of a Chimney, commonly standing out perpendicularly (but sometimes circularly) from the back, on the extremities of which the mantle-tree rests.

CHIMNEY-PIECE, is a composition of certain mouldings of wood or stone, standing on the fore-side of the jaumbs, and coming over the mantle tree.

Of the general Structure of Chimney-pieces and their several Materials.

We are in nothing left so much to the dictates of fancy, under the whole science of architecture, as in the construction of Chimney-pieces. Those who have left rules and examples for other articles lived in hotter countries; and the Chimney was not with them as it is with us, a part of such essential importance, that no common room, plain or elegant, could be constructed without it. With us no article in a well-finished room is so essential. The eye is immediately cast upon it on entering, and the place of sitting down is naturally near it. By this means it becomes the most eminent thing in the finishing of an apartment; and, as fancy is to take the place of rule and example in its construction, nothing is more essential than to direct the young architect how he shall employ this wild guide properly, on what occasions he is to give the reins to imagination, and when it is to be limited by method.

We shall endeavour to lay before our readers all the variety that can properly be introduced, and every kind of allowable ornament, adding to these what may be transposed from other parts in the antique structures, and upon what plan he may devise innumerable and unexceptionable decorations.

We shall first consider the structure of the part, and passing over the lighter, rest upon the more worthy materials.

The

The square body of a Chimney, opened on one side from the level of a floor to a due height, for the convenience of making a fire, and the advantage of receiving its heat, gives the whole idea of the plain Chimney-piece: that is, a square aperture in one side of the structure with the raw bricks as edges. Thus it appears to us in the first construction of rooms; thus it appeared to those whom necessity first taught its use; and thus it stands before the architect to be finished.

The form and dimensions we have considered among essential parts; and its decoration now comes into the regard among those which are purely ornamental. To trace this matter from its origin, we shall be led to the rise of the first plain Chimney-pieces, formed as all other ornaments that have their foundation in a sense of utility, from the inconvenience of the part to be ornamented in its natural condition. The edges of a brick wall thus furnishing the original chimney, would crumble and break off; and they would be inconvenient to those who sat near them, by their roughness and foulness. To take off this disagreeable look and inconvenience at once, a frame of wood-work was carried round it, a board on each side, and a third at the top; and this upper one, whose thickness first seemed as a ledge to hold things, gave rise to the mantle-piece, now so common and so proper an ornament to the construction.

The first improvement was painting these boards; and the next was supplying their place with more proper, or more ornamental materials. Stone was fitter to be near a fire than wood, because not liable to accidents of burning; and the use of this soon introduced that of marble.

The stone Chimney-piece, while it banished the fear of fires, renewed the other inconveniency of the original Chimney, though in a less degree; for though less foul than brick, it was not near so cleanly as wood. Here marble supplied the deficiency; as secure from fire as stone, and more beautiful and cleanly than wood.

Of simple and continued CHIMNEY-PIECES.

Thus far the first efforts of the rude architecture in early time carried the decoration of the Chimney. In after ages, a variety of marbles, exceeding one another in beauty, took each other's place in magnificent apartments; and to these first the sculptor added the graces of his art; and afterwards the architect, judging the construction of the ornament not unworthy his most serious attention, enriched it with columns and their entablatures, till the workmanship eclipsed the best materials. We shall consider hereafter the variety of materials the ancients had for their greater purposes, most of which remain for our service in these articles, and shall then treat of the addition of ornament.

In

In order to ascertain the propriety of the peculiar kinds of marble we shall recommend, (for it is not every one we can recommend to the architect for his purpose,) we shall first consider the Chimney-piece as suited to rooms of more or less elegance, by placing it before him in the two general conditions, simple, or continued to the cieling; by simple, we mean a Chimney which terminates at its mantle-piece, or by a pediment, or other such ornament over it; and by this kind of Chimney, continued up to the cieling, we understand an entire work finishing that part of the room, and consisting of the proper or simple Chimney and ornaments above correspondent to it in breadth, leaving a pannel for a picture, terminated at the height of the room, with sculpture, accommodated in nature and degree to that of the lower part.

These are the two general ideas the student is to entertain of a Chimney-piece.

Those kinds of marble may be very well suited to one Chimney-piece, which may be altogether improper for the other; for in the continued Chimney-pieces we shall give, for many purposes the upper work is to be of wood or stucco, plain or gilded; and in all these cases there are rules to be had, from its nature and intended surface, for the kind of marble which will be fitted for the work below.

Of the various Ornaments of CHIMNEY-PIECES.

When we have introduced the student to the first distinction and general division under which he is to regard this part of a room, we shall consider the various ornaments of which each kind is capable. With respect to their appropriation and use, he will find that the simple Chimney is best suited to a papered or plain room, or to one that has little additional decorations; the continued kind to those which have higher finishings; and he will find that the whole honour of this work will depend upon the suiting this continued ornament to the rest of the finishing. Both the one and the other are susceptible of all the grace of ornament.

We shall afterwards treat of the distinct kinds of decorations, which are proper to either in particular, or common to both, and shew the use of columns and similar decorations. From these we shall proceed to the introduction of figures, the Caryatic or Persian orders, &c.

Of the Appropriation of the Materials to CHIMNEY-PIECES.

Upon the before mentioned distinctions we shall be able to speak intelligibly to the student with respect to the different kinds of marble, and their proper use. When we can be distinctly understood what is the character of the simple and continued Chimney-piece, that with mere sculpture, that with columns, and that with figures, we can without tediousness

diouſneſs explain, what is the kind of marble ſuited in general to either purpoſe.

Having given this diſtinction of Chimney-pieces, that of marble follows, the nature of the materials being a proper appendage to the variety of the works. We ſhall conſider the ſeveral ſpecies particularly hereafter; but for the preſent it will be neceſſary to eſtabliſh only one general diſtinction, this is, into the plain and variegated marbles. By the plain the ſtudent is to underſtand thoſe marbles which are throughout of one colour, whatſoever that be; and by the variegated, ſuch as have more than one colour, however, diſpoſed. Of this latter kind there are a great number, and they have their variegations in different manners and degrees, but in whatever degree or form they are diſtributed, our rules to be eſtabliſhed in this place ſuit them alike.

Many of the variegated marbles are very expensive in the firſt purchaſe, and ſome of them have a vaſt additional charge attending the cutting. Thoſe to whom expence is a recommendation (and there are too many of that claſs) determine generally by this, and allot the moſt expensive kinds for the richeſt Chimnies: but let our ſtudent guide himſelf by better rules; let him conſider to what purpoſe each will beſt ſerve, which have the moſt compact ſubſtance, and will beſt answer to the artiſt's chifſel, and which from their ſhattery nature are fitteſt to be wrought plain. This is a rational and great diſtinction; the architect that goes to work without this conſideration, and without a knowledge of the nature of the ſeveral kinds, will involve his proprietor in expence to no purpoſe, and hurt his own reputation. This is a diſtinction founded on the nature of the materials, and is therefore to be obſerved inviolably; but there is alſo another of almoſt equal importance, though much leſs regarded, which reſults from their plain or mixed colouring. The ancients were aware of the effects of this upon the eye, and they conducted themſelves in general accordingly. There are exceptions; for there were unavoidable neceſſities in ſome caſes, and there were among them ſome workmen of leſs judgment; but in general the rule by which they guided themſelves was this; when they intended a great deal of ornament, they employed a plain marble; and where they propoſed leſs workmanſhip, they allowed the moſt variegated kinds. The reaſon of this is evident, and it is ſurprizing that all ages have not attended to it: the beauty of ſculpture depends upon light and ſhade, and therefore every thing which diſturbs the light in this reſpect, defeats the purpoſe of the artiſt. Any thing creates this diſturbance, that occasions a different reflection of the rays of light; and we know that the rays differ from every colour. The ſhades give the eye all the idea it has of this great ornament; and theſe are diverſified when the light is reflected from an object in different colours.

Therefore

Therefore for all sculpture and ornament, the best material is that which is of one simple colour. This is an invariable rule, founded upon unalterable principles in the nature of things; and this the young architect is to make the first guide of his conduct. This will throw him upon a determination very different from that we have named as the common opinion of common judges; instead of bestowing the richest-coloured marbles upon those Chimney-pieces where he intends the greatest expence of ornament, he will reserve these painted kinds for such as he intends should be wrought with less assistance of the chissel; and he will adopt for these high sculptured pieces always a plain marble of one uninterrupted colour.

Of a Doric CHIMNEY-PIECE.

Upon the plan already laid down, let us now advance to a Chimney in which there is the use of an order. We begin with that which stands lowest in rank among those proper to be used for this purpose, the Doric; and there is none that answers the intent more happily for general occasions. If ever the Tuscan order should be thought of, the common room of a Dutch ordinary would be the only place for it, and then wrought in wood, it might stand an emblem of the taste of the country; but the very next step to this raises us to great elegance and dignity. As the Doric is an order very well becoming a Chimney, it will naturally be most used. No richer order need ever be thought of for a parlour; and there are very few dining or drawing-rooms in which it would not be proper. We will propose such a Chimney in its plain use without addition or continuation, that the student may not be embarrassed with any additional articles in the consideration; and we will suppose it in a parlour papered in the present fashionable manner, where nothing is added to it, and where, from the plainness of the rest, and the great difference in colour it stands very conspicuous; the first object that strikes the eye on entrance, and the only one that can fix the attention.

In this case, as it will be considered strictly, let the architect take care it be liable to no objection; and as there will be some expence in the use of the order, at any rate let him take care the aspect answer the charge. In the first place, let him consider the outline of the whole, and let him see that the entire work be not too high. The Doric is not a lofty order, and very little is intended to be added here above its cornice; in this instance, therefore, the general design must be that of a grand and solid Chimney-piece, whose proportion and regularity are to be its sources of grace and ornament.

The column is no way so happily proportioned for a near view as by the method of Palladio's measures; and there is no use of an order in
which

which it is brought so perfectly before the eye entire as this way. This understood, let the architect design the outline of his whole Chimney-piece, and raising the column upon a plinth, construct its several parts, architrave, frieze and cornice, with the due proportion to its height and diameter, carrying up above it a plain piece of the pedestal from over the columns, by way of finishing to them; and continued at the same height all the way between. This is the general idea; we shall descend now to particulars.

To execute the Chimney-piece here designed in its full elegance, the columns must be two on each side; we are sensible this must be an addition, and a very considerable one to the expence, but the advantage will very well repay it. The first things that occur to the imagination of the architect in this place are the distance of the columns and their projection; these we shall immediately settle. The distance must be such, that a triglyph come regularly over the axis of each column, and a metope of due measure and proportion be left between. In this manner of coupling the Doric columns, there is all the grace of which that order is capable, and the full beauty of its frieze is displayed in the most agreeable manner.

As to their projection, let the young architect remember, that columns have never their full beauty, but when they are perfectly free. These therefore should be brought forward in such manner as not only to shew their whole contour; but there should be a free space behind, corresponding to that between them; and they will there be seen in their full perfection. We are not for tying down the architect to lines and inches, that not being needful; but advise him to keep a moderate proportion.

In directing the Doric order to be constructed in this distance, upon the rules of Palladio, we order the attic base to be placed under it. This is our reason for raising the column above the level of the slab, for the mouldings of the attic base would otherwise be in danger of injury from accidents. The columns on each side should therefore be placed upon a common or continued plinth, brought forward according to the projection we have allowed in the plan. From the base on this plinth let the column be raised in all its plainness and proportion; let there be no flutings or other ornament on the shaft, but let its diminution be properly observed, and it will in no instance be seen more conspicuously. The capital is to be after the Palladian measure; so in this there is no choice; but the neck of the column may, at the discretion of the architect, be left plain or decorated with roses. The expence of this ornament is below consideration, but its effect is more than can easily be conceived.

Besides the working the several proper mouldings with truth, which in this order is the right source of elegance and grace, there remains the consideration of the frieze, in which our student is aware he may, at his pleasure, use more or less ornament.

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The Doric, without its triglyphs, wants its most essential character, and seems but an elevated Tuscan. These, therefore, we would enjoin our student never to retrench: but there remain the metopes or square spaces between them, in which he is more at liberty. None would call it an omission if he left them plain; but they are a very agreeable seat of ornament; and something may be added in this respect at a very small expence. The ancients, who used this order first for temples, chose for their decoration the instruments and objects of sacrifice; but this is by no means the business for a Chimney. It will be best to decorate them entirely with the works of fancy; or with alternate flowers and fanciful figures. In this respect, let the architect observe the proportion of ornament, between the neck and the shaft, which is the only part on which we have allowed it, and the metope, which is the sole part in the entablature, in which any thing can be placed to correspond with it. If the metopes are decorated with figures, never let the neck be plain; but let it certainly have roses, correspondent to those embellishments. The rule is not so absolute on the other side, but that it may admit of licence in favour of the smaller part. The strict doctrine is, that if the metopes be left plain, the neck be also plain. This is founded upon the laws of the science, but in the present instance, we shall observe they are not inviolable; and advise the young designer, if there be any decoration in the rest of the Chimney-piece, which is the point next to come under consideration, that he allows roses to the neck, though the metopes be plain.

Of the Ornaments of the rest of the CHIMNEY-PIECE.

The student will easily conceive, that the coupled columns do not compose the whole Chimney-piece; they would appear raw and naked if they came with their edges to the aperture of the fire-place. They must have a back, and that must be continued to some breadth within the expanse; and it will receive very properly some decoration. This part might be carried plain to the edge, but it would by no means agree with the bases of the columns, or mouldings of the entablature. All here should be of a piece, and the least that can be added is a bead by way of margin. This will be only fit when the order is executed in the plainest manner; and even then it will be much better to allow something more. A raised ornament of mouldings is the least that should be thought of; and at pleasure there may be thrown behind these an edge of sculpture.

The quantity or form of this is altogether the work of fancy. This ornament being added to the verge of the aperture, the frieze forming a continued line, from one pair of columns to the other, will be too tame and uniform for the rest. Its length will indeed be over proportioned in every sense, and it remains to consider, in what manner to break in upon it.

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The plainest, best and easiest manner, is by inserting a tablet over the centre of the aperture, to intercept or cover so much of the frieze. This is a kind of addition, very natural and very proper in a Chimney-piece; and it will receive any ornament the architect shall find correspondent to the rest of the work. The plainest and most natural is an urn to fill the centre; and from the handles of this may be dropped on each side a festoon, which dropping towards the middle, may be raised again, so as to reach the upper corner on each side of the tablet.

This done, the Chimney-piece may very properly be stiled compleat. But still there is a part, in which, if the architect pleases, he may indulge his fancy with some ornament. This is the plain-piece, carried up above the cornice, to correspond with the finishings of the columns. It is but little that should be done here; and it is much easier and more natural therefore to err on the side of excess than of defect. Scrolls may be added to the projecting parts, at the ends which finish the top, over the columns; and over the tablet in the centre may be raised a small pediment. Thus much may be allowed within the bounds of the most sober rule and method: more may be added, but it will be wrong, for the intent is, that the body of the Chimney-piece should attract the eye, not this additional part.

The pediment should be open, because it will then receive a figure; and custom prescribes the adding that part of decorative furniture. The depth of the cornice, and the flat top of the additional part, will serve as shelves for fanciful embellishments; and of whatever kind they are, there should be three principal ones, one on the lower part in the pediment: the two others are the extremes of the upper directly over the columns: these may be vases. This is always right in the eye of reason, because it gives the columns an appearance of use. In architecture, every thing should at least wear the aspect of being intended for utility; for this reconciles the whole to reason. We know the columns in front of an edifice, are usually meant only for ornament, yet they never give so much satisfaction, as when they are terminated by an attic pilaster, and that supports a statue. The case is the same here; the vase we propose as the principal figure at each corner will stand in the place of such an image. The projecting part of the top-piece serves as the attic pilaster in other instances; and there is that sort of delusion we expect in these instances, the columns seem placed there for some useful purpose. Having thus considered at large the construction of this Chimney-piece, we shall enter upon the subject of the most proper materials.

Of the kinds of Marble most fit for this CHIMNEY.

Custom allows the architect great liberty in this respect, and it is often abused; we see Chimney-pieces very well designed, and even well executed; where the choice of the materials disgraces the construction, and buries the ornament. Against these errors we are to caution our student; and if he recollects the principles we have already established respecting the use of plain and coloured marbles, he will not be at a loss for the foundation of all we have to add respecting his conduct in the present instance. In the first place, he has his choice of three manners in which to execute the work in point of materials. It may be entirely of one kind of marble, or it may take in two kinds, or it may even receive the addition of a third.

The plain manner is to make the whole of one kind, but in the second instance, the body of the Chimney piece being of one kind, the columns are to be of another; and in the third, the columns being of one kind, and the body of the work of another; the tablet, which is a very conspicuous part, may be of a third. This may be carried yet farther, for the tablet being of a distinct kind, the sculptured ornaments may be of one different even from that, and the plain part will serve as a ground and foil to them. The plainest way of all would be to execute this Chimney entirely with white marble, and this will be extremely pleasing. But let the architect, who superintends such a work, see that the true, pure, statuary marble be employed: for though the plain white is very proper, nothing could be so improper as the veined white, or common marble. The reason why the plain white would be proper, is, because it would clearly and beautifully shew all the work in the scrolls, about the festoons in the tablet, and the decoration of the freeze of the order. This it would do, because being of one entire uniform colour, it would always receive and reflect the light with truth; but in the common marble, which the vulgar suppose like this, and fit for the same purposes, the veins would appear as so many shadows, and would perplex and confound the whole work.

The body of the Chimney-piece in white, and the columns in black marble, would be agreeable to the eye, but monumental; we name this because there are rooms of a particular cast which it may suit: but what we shall absolutely recommend to the student is to adopt both the rules in the construction of this piece, and give a coloured marble for those parts which are detached and plain, and to make the rest of an uniform colour. In this there is still great choice, for the columns, according to this rule, may be of any of the coloured marbles, and the body of the Chimney-piece of any of the plain ones; but where there is even so much choice,
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there is always a preference in some articles. Here the most elegant manner would be to construct the whole body of the work of pure white statuary-marble, and the columns of the syena, or gold and purple. Marbles of greater or less expence may be found at every statuary's, and many that will answer the same purpose: this will give the general rule, by which, to regulate the choice in every kind.

The tablet still remains to be considered, for it is absolutely a detached piece, and may be of any one of the other kinds, or different from both.

This last method is never to be used, unless when it is of a very rich material. Some of the French marbles, that are veined in the manner of agates, may be used, but they are the poorest kind that can properly be admitted; and as they are very irregular, their veins running wildly, and there being chasms or holes in many places, if they be admitted, there must be great care in chusing a perfect and well figured-piece; and in giving it the most complete polish of which it is capable. There are some of the old marbles much more fit for the purpose; the true verde antique, will be a glorious addition in this place, its elegant green being altogether unlike the whole; and upon this the ornament well wrought in the same statuary kind will be very elegant. A tablet of the true porphyry will also suit very happily; its bloody tinge never shewing itself so rich, as in the contrast of the pure white of this statuary kind. If these do not please, the choice should fall upon the granite, whose singular aspect, thus contrasted with the rest, cannot fail to please every eye; and whose everlasting polish adds greatly to its recommendation.

Having thus established rules for constructing these plainer Chimney-pieces, we shall, in our next, enter upon such as receive the addition of figures.

Of a CHIMNEY-PIECE with FIGURES.

We named the use of Figures, that is, the introduction of the Persian and Coriatic orders in the decoration of Chimney-pieces; and as nothing that can be used on this occasion is more delicate, we shall, by a familiar instance, explain the general doctrine relating to their use. It is enough to say here, that they are representations of persons of different nations, whom, instead of devoting for life to the meanest and most laborious employments, the Greeks consigned to immortality in the figures of them in their temples; supporting the weight of the upper part of the building, or seeming to support it.

Men of rude genius represent them crushed and sinking under the weight, and think it a high degree of merit, if they can figure in their sculpture, starting eyes or bursting sinews. The Greeks detested such barbarity; nor, I hope, are we so justly censured for a love of cruelty, that such sights could please us. It was enough for the polite and hu-

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mane Greeks, that they could place them for eternity in the condition of abject slavery; they did not desire to make the load oppressive. Their figures were easy, and the incumbent weight was not great. Let us in all things imitate them; but it is in no part of architecture we ought so strictly, or can so easily follow them, as in the use of these orders in the decoration of Chimney-pieces. The eye is continually upon these figures when placed in such a situation; and he must have a barbarous fancy, who would wish to dispose them in attitudes of horror. Every thing there should have an air of cheerfulness; at least, nothing should give the idea of constraint or pain.

This general maxim will guide the student in his choice and disposition of these figures; and he will naturally acknowledge the force of two general rules for the choice and disposition of these figures.

1. That the Persian order is fittest for the continued Chimney-piece, and the Cariatid for the simple.

2. That very little weight be laid upon either; that the simple Chimney-piece of this construction terminate absolutely at its proper mantelpiece, which must be the top of the entablature of an order; and that in the continued kind, the ornaments to the ceiling be light; and the materials also of a light kind: upon this alone depends the idea of ease in the figures; and consequently upon it depends entirely our satisfaction in viewing them.

This makes it natural that the figures should not be distorted: and we shall give one general direction to the sculptor, with respect to their countenances; which is, that the Persian, or man-figure, have a look of indignation or contempt: and the Cariatid, or woman of dejection without pain. Let the Persian seem to say he does not feel the load, but the indignity; and the Cariatid that she understands her condition with humility.

Of a CHIMNEY with the CARIATIC ORDER.

Let the person who proposes a Chimney of this kind, or who receives the proposal from his proprietor, first represent to him the expence. This is a very needful article at first setting out, for if it be omitted, he must expect, either that the owner will be startled at the charge, or that the work will disgrace him.

The figures in such a Chimney are near the eye, so that every defect will be seen as well as every beauty; and they are of the nature of those other elegancies in the art which had much better be omitted entirely, than done in a slight manner. It is usual to crowd other ornaments among them, and about the same Chimney; for the common opinion is, that one fine thing must be near another; but this we do not mean. Plain-

ness in a certain degree is preferable, because it is more correspondent to the figures; but the needful expence is, that the Chimney piece be of sufficient extent and bigness, that the materials be good, and that a full price be allowed the sculptor. He must finish his work according to the price; and there is none too great that is within the bounds of reason; for there is no occasion on which his art may be displayed so perfectly.

We are to treat here of a Chimney of the Cariatid order, and according to our first principle this must be a simple one. The female figures of this order are to stand at seeming ease, and it would be monstrous to load them with ornaments up to the ceiling. Themselves are sufficiently ornamental for the work, and the less the eye is disturbed in contemplating them the better. For all these reasons, a plain or simple Chimney, which terminates at the mantle-piece, is the proper one for the reception of the Cariatid order. This mantle-piece should be formed by the projection of the entablature, supported by these figures, with no farther addition; and there is to the true architect an absolute rule what this entablature should be. This deserves a strict attention; for whenever there is an absolute rule from antiquity, and no objection lies against it in nature or reason, nor any thing better can be put in the place of what it directs it is wrong not to make it absolute, and accuse all of error who depart from it.

When we speak of these male and female figures, under the name of Persian and Cariatid orders, we do not consider them as simple statues, but as parts of an order of architecture. They supply the place of the shaft of a column; and they are to support an entablature.

We see fancied mouldings placed upon the heads of these figures in modern works; for there is no error or absurdity so gross, but some of those whom of late times we have called architects, have fallen into it: but in the earlier times it was otherwise: the chaste taste of the Greeks admitted none of these irregularities; the termination over a Persian or Cariatid statue was always the regular entablature of one of the orders.

It was this which determined the order; for the statue served as the shaft to any: and their general distinction was, that the heavy entablatures should be laid upon the Persian, as male figures, and the lighter upon the Cariatid, or female. But this was not all, they appropriated one entablature to this figure, and in their correct pieces used that only. It was the Ionic: none serves better than this in the natural form and correspondence to the figure, for a heavier would be absurd, and the two superior orders have entablatures too much enriched for the statue.

The Ionic entablature was upon this consideration more suited than any other to the Cariatid figures, and this would have its use general among that judicious people; but there was a farther thought that made it universal: this was the commemoration of the great event they served to record

record, in all its particulars. The Ionians were the people who reduced Caria to the Grecian yoke, they therefore placed the entablature belonging to the order of that name, always upon the heads of Cariatid statues, to tell this story to posterity; the Ionians subdued these people. This, though hitherto unregarded by architects, we shall not hesitate to lay down as a law of the science; that the Ionic entablature be laid upon the Cariatid figures in all places where they shall be used. Reason shews it is proper, and the authority of Greece supports it. The whole matter in these fanciful pieces is trifling, in comparison of the regular majesty which is seen in the great original orders; but when we use them, let us with regularity copy those who first introduced them into the science; and like them tell the whole story.

Of the Construction of the FIGURES.

It has already been observed, that the Chimney-piece in which these Figures are introduced should be large; that it should have no ornament above its mantle-piece; and that the mantle-piece should be the top of an entablature, and nothing more: it is determined that this entablature should be Ionic; and we are now to consider the construction of the Figures.

Their length being determined by the design of the general work of which we shall speak hereafter; the proportions are all regulated by that: the human form is the standard of truth in this respect, only let the sculptor remember, that it is a female Figure, and that it will be best if he make it of the most delicate form. No great weight is to be supported; and consequently, no robust limbs are necessary for the purpose. Thus much determined, two points more occur: the disposition of the limbs and the drapery. These we shall consider separately.

When Figures are raised to a height which places them out of the way of accidents, their limbs may be disposed with a freedom which cannot be admitted, where they are in the reach of blows: nothing can be more in the way of these than a Figure which makes part of the ornament of a Chimney, because the persons who sit near the fire, will lean or rub against it; and the continual business of servants in managing the fuel will carry them also for ever in the way of touching it. Let the architect consider what parts are most liable to damage. These are the hands and feet; and particularly the extremities of them, the fingers and toes.

If the hands were displayed at a distance from the body; and especially if the fingers stood loose and free, a few days could not fail to maim them. We see this in effect, where injudicious designers have formed them in that manner; and experience joins with reason in directing a contrary course.

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The first thought would be to throw both arms close to the body ; but that would be at once ungraceful and improper. It is natural that a person loaded upon the head, although but slightly, should raise one hand to help to support the weight ; and this must be done in the present instance. It will be higher than the part of the image that is in most danger of accidents. The arm, even in a delicate Figure, may be strong enough to resist a little injury ; and the tender part of the hand may be defended from it.

The proper posture of a Cariatid Figure at a Chimney, is, to have one hand close to the body ; and the other raised to assist in the imagined support of the mantle-piece. The hands must be delicate, to correspond with the general Figure, and they will require the best touches of the sculptor's chisel, because every eye will naturally be thrown upon them. The fingers must be small to answer to this general design ; and those of the lower hand will be exposed naturally to blows and injuries ; while those of the upper will not be altogether exempt. The design of the architect is to shew his judgment in securing them gracefully ; as the sculptor does in forming them. The hand that is carried up to support the entablature, may very properly be placed upon the freeze ; and in this case, the projection of the cornice will give it a great security. It would be very proper to give the order its pulvinated or roundish freeze for this purpose, that the hand may be shewn in all its delicacy, grasping it. In this case, the cornice would not only be its defence ; for the fingers might be united to the body of the freeze, and thus would have a strength that they never can when loose. This hand being so securely disposed, let the student consider what can be done to preserve the other ; it is in most danger because it hangs lowest, but there is an easy way to defend it. Nothing can be so natural an employment for this hand, as holding up a part of the robe ; and this may be its security. There will naturally be a fold and a rising in the part held up, and these may be wrought though with the utmost delicacy, yet with great substance. In the hollow under the rising may be placed the hand, in which the most delicate touches of the chisel may be shewn, while it is thus preserved in the greatest security.

Should any one suppose the necessary lightness of the robe cannot be preserved with this quantity of substance, necessary to preserve the hand from accidents, we refer them to the Flora, well known to all who have viewed with taste the rarities of modern Italy. The quantity of marble in that is three times what is bestowed on most other Figures, yet it is the lightest of them all.

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Of the DRAPERY.

Modern sculptors delight in nudities; but in a Chimney-piece they would be abominable; they would shock the delicacy of our sex, and could not be seen by the modest of the other; they are therefore absolutely excluded from this service, and some Drapery is always to be allowed: the question is, how much and in what manner.

Let no statuary object that the great excellence of his art is withheld, for that it would consist of muscular figures. We banish anatomy from the parlour of the polite gentleman: that is all. Let him copy his giants for exposure, from those masculine forms the ancients have left, or from rough and violent nature; but here let him give his figure cloathing. Nor shall we suffer the complaint unanswered: we shall tell him, it is as difficult to excel in Drapery, as in nakedness; and may refer him to those cloathed statues of the Greeks and Romans, which it would be glorious to imitate. That these are capable of equal excellence, and may obtain the sculptor equal praise is evident from those examples: with respect to the elegance and propriety, all may judge.

Of the Construction of this CHIMNEY.

Much is now done towards the general construction of the Chimney-piece; for in considering the several parts, we have observed, that there are to be two female figures supporting an entablature, whose top serves as the flat of a mantle-piece. We have established it as a necessity, that the whole work be of considerable extent; and there remains only to place the figures, and add an inward ornament to compleat the structure.

Let the figures be placed near the extreme edge, but not absolutely upon it, for they will be the better shewn when a part of the flat-work projects beyond them; and they will also be more secure.

Let a kind of plinth be placed under them, for it is by no means proper they should rest immediately upon the hearth; and this will serve the same useful purpose in preserving the toes from injuries, that the freeze of the entablature answered for the defence of the hands. They may be disposed both firmly upon it, and be made of one piece with it; or that foot which projects forwardest, and is there in most danger of hurt may be so disposed, and the other which is backward may be made with more freedom, to rest lightly upon it by the toes, or if the sculptor pleases to be absolutely removed from it, it will be safe from its position; and he may employ all his delicacy in constructing it with security. As the foot rests upon a plinth, the head is covered by the entablature. It must be brought forward to answer the projection of the figure: and this will

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give a relief of light and shade to the whole, and be an ornament to the construction.

There being a small space of the back beyond the figure on each side; there must be a larger within, and this will require decoration; every architect knows this, and the fault is usually that of employing too much.

The opening of the Chimney will be much lower than the mantle-piece; or, properly speaking, there will be a considerable space between the ornaments of that aperture and the lower member of the entablature: this must be allowed some ornament, but let it not be too much. A vase will be very proper in the middle; and a festoon on each side to the edge. The ornaments which surround this aperture must be handsome mouldings. They must not be continued to the level of the hearth, but terminate at bottom on a plinth of the same form with that which supports the statues. These may be ornamented with sculpture; but it is an expence better saved. There is a correspondency of parts which is preferable to decorations of fancy; and this is only to be found in such a construction in plainness.

Of the Materials of this CHIMNEY.

Let it be observed, that the figures be of pure marble, of one simple colour; and none is so proper as the plain white, which we know by the name of the statuary marble. If the whole structure be of the same, none can object to it; but there will be elegance in giving the back and body of the work in marble of another colour.

Great beauty will be displayed in making the body of the Chimney of the green and white marble, which is commonly called Egyptian; but the greatest elegance of all would be to work it in porphyry. The common purple marble would not answer the purpose, because the spots and cloudings would confuse the eye; and as it is not easy to find a person of such expensive taste as to go to the price of porphyry, we shall propose to make the back of Syenna marble: this is of a colour which very finely shews white, and will elegantly answer the purpose; and finely ornament the figures.

Of a CHIMNEY-PIECE, whose sole Ornament is SCULPTURE.

Let us on this occasion suppose a room of a moderate size, finished in the fashionable way, with light ornaments on the cieling, and with the walls papered; a Chimney-piece of some elegance is to be erected in this room; the proprietor dislikes the orders; or the natural bigness of the whole is not sufficient properly to receive them: the architect is to give him a design for its construction; and he begins with a general outline
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for the sides, and a more particular consideration for the top. This is to be the seat of ornament, and he adapts to it the decorations of an entablature of one of the superior orders. In his first design he sees a flatness that displeases; and, to remedy this, some parts must be brought forward.

We have observed how much beauty the projection of the corners of the Ionic entablature over the heads of the Cariatid figures gave to that Chimney; and the same elegant diversity of light and shadow will occur from bringing forward the two ends here. If this be not enough, place a pediment upon the centre. We should have objected to this in the preceding instance, because it would have loaded the figures; but here there is no objection.

A tablet should be placed in the freeze, under this pediment; and the projecting part at each corner will admit in its freeze a vase. There requires a face, or some other principal figure in the tablet; and thus is laid down the principal of decoration. These swelling corners of the entablature require some support; and as columns which would naturally occur for that service are forbidden, the most proper design is a scroll on each side, in the manner of a console. This will admit a kind of fluting or cabling at distances upon its surface; and an acanthus leaf may cover its lower part. There will be beauty in such a construction; but the judicious eye will only allow these as an apology for columns.

The scrolls must not rest upon the hearth, but on a plinth; and the addition of this compleats the material part of the structure. What remains is Sculpture; and the nature and design of this is plainly pointed out. The common carving of a quarter round into what are called eggs and anchors, will serve to decorate the inner edge to the aperture; and the proper Sculpture of the mouldings for a cornice of a rich order gives nearly all the rest. A festoon from the face to each edge of the tablet, and another on each space on the two sides of that projecture, finish the whole; and there appears a Chimney somewhat less expensive than it would have been if the orders were employed. But though it must be allowed a great deal of beauty in this way, he must have a poor conception of the grace and dignity of those great parts in architecture, who does not see the addition in beauty from the use of them, would have been much greater than the extraordinary expence.

The materials of such a Chimney are limited by the quantity of Sculpture. To some marble of one colour; for the greater part of the expence would be thrown away upon a veined or clouded marble. Statuary-marble is again preferable to all others on this occasion; but the whole in a perfect black would have a very agreeable, though grave aspect. If a gayer marble be used, the Syenna is best; but in that case the festoons, and other ornaments, will be best in statuary.

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A CHIMNEY-PIECE with single DORIC COLUMNS.

The room in which the Chimney-piece is to be placed, may be suited to a lighter, or to a more massy kind; for this part of the finishing should always be correspondent to the rest; and this may give a rule for varying the practice.

We will suppose, for the present instance, a room finished in a modern degree of elegance, and that the proprietor desires to have a Chimney decorated with one of the orders, but not at too great expence. In this case, the finishings of the room, and the intention of the owner in point of expence, limit the number of columns. The first thought refers the architect to the Doric order, as by far the least expensive; and both determine against more than one column on each side. Upon this plan it will be easy to construct a light and elegant piece; the price of which shall be very moderate for a Chimney with an order, and its lightness correspondent to the rest of the work.

Let the student mark first upon his paper the outline of the aperture. Then on each side let him mark the outline of the work; to which, as there is to be only a single column, he needs not allow great breadth; and after this let him draw the outline of the top member of a Doric cornice, determining its height from the measure of the Columns. We do not intend to determine the work here: but let this be first done. Let an open pediment be raised from the middle of the cornice; and that this may not stand naked, let another strait line be drawn just above its top, and stopped each way at the breadth of the sides. The cornice of this order will project farther; but that is not to be the measure of this upper work, which is to serve as a continued attic for the finishing.

Of the several Parts in this CHIMNEY.

The outlines thus laid in, the student will easily comprehend the disposition and form of the several parts. Let the columns be first considered, and let them project so far as to stand absolutely free and clear. Let them rest upon the hearth by their plinth: on this place an attic base; and carry up the shaft, with its regular diminution, according to the rules of Palladio. On this place the capital, and let its abacus range with the line which marks the top of the aperture. Upon this capital let the regular cornice of the order rest. It must project to come over the column; and, receding each way to the back of the Chimney, there will be an agreeable mixture of light and shade. Let the whole aperture of the Chimney be terminated by an architrave, with a carved quarter-round for the inner edge, and over the center of the Chimney's opening let

let it rise to support the cornice. The pediment is placed above this, and this rising or the architrave has the appearance of a regular support to it. The freeze, where it is continued entire, must have its proper ornament of triglyphs. One will stand over the axis of each column, and two on each side, between the projecture for the column, and the rising of the architrave.

In this Chimney, whose expence is to be of a limited kind, we would have the metopes plain, or left without ornament; and consequently the neck of the column must also be plain. The roses in most cases allowed to this part cost little, and are a great ornament; but they must not be used when the metopes are plain. Over each of the columns let there be raised an attic pilaster, projecting as the column does; this consisting of its base, die, and cap, will give the ornament of the plain course behind: its base must be continued each way to the pediment, but there interrupted by it, and the cap must be continued along the whole course over the top of the pediment.

Of the Materials for this CHIMNEY.

The sculpture being little in this piece, the architect has his choice of materials. There is so much decoration of a nobler kind, that the plainest will serve; at the same time the sculpture is so little, that the most pompous of the variegated kind may be used. The body of the work may be of statuary, and the columns of Syenna marble. This will be a very happy mixture, for the gold and purple of that elegant species are never seen to so much advantage as when contrasted with white. The body of the work of the common purple and white, and the columns of the statuary, would also be handsome; or if the columns were of the French onyx marble, and the back white, the colours would be shewn in the most advantageous manner, and the columns would appear like agate. We have a green and spotted marble in Anglesea, that would make very handsome columns for a white ground, or a very handsome ground for white columns; and there is a singularity in this marble which should make it extremely valued: this is the veins of asbestos, which are lodged in it. These are of a glossy white, with a tinge of green; the veins are about a quarter of an inch broad, and the threads run crossways. They are so extremely close arranged, that they look as firm as the body of the marble, and not even fire can hurt them. This greatly exceeds the common green and white, which is called Ægyptian marble, and ought to be more regarded.

Of a CHIMNEY with TERMINI.

We have given the use of columns in plain Chimney-pieces, and the appropriation of scrolls to supply their place, where any particular fancy in the proprietor declares against their use. It remains that we treat of a kind between the fanciful or Cariatid orders, and these scrolls; and these are of the nature of Termini. They consist of the head and breast of a human form, and a scabbard receiving the limbs.

We set out with observing, that fancy was to be freely indulged in the construction of Chimney-pieces: these are, or all the figures that can be introduced, the most fantastical; and it will be no where so proper to introduce them. When the student falls upon a design of using them, let him first observe, that one of the simple Chimney-pieces, that is, one of those which terminate at the mantle-piece, is fittest for the reception of them; for it would not be easy to continue a correspondent ornament to the top of the room.

Besides, as in such a Chimney there must naturally be a great deal of sculpture, the continuing that in the same taste, if a proper form could be devised, would be of enormous expence, and would distract the eye. It is fit the attention should be fixed where there has been so large an expence, and so much labour and genius to demand it; and for this reason, as well as the other, the work should be confined to one place, bestowed about the lower part of the chimney-piece, and full in the eye on every occasion.

Of the Construction of this CHIMNEY-PIECE.

The first consideration of the architect in a design of this nature, must be that of giving it a freedom in all its parts. There will be somewhat massy in the figures themselves, for it is the nature of these kind of designs to swell out at the breast; but he is to contrast this with lightness, and an airy look in all other parts, and to give free scope to his imagination. On these principles let him sit down to his design, and mark with a faint line the outline of the whole. This will be naturally three sides of a square; but it is to be broken through on several occasions; for so many straight lines would give a stiffness altogether discordant from the design of ease and freedom. This outline first given, which only serves to determine the general extent, let him design his termini. They are to be raised upon a square plinth, and their heads are to support the mantle-piece. This gives their height, and from thence are to be deduced their proportions. As these are the principal part of the Chimney-piece, let them be drawn first, and the rest made correspondent to them. The
face,

face, the neck, and a part of the breast, is all that must appear human ; and as this part of the body is much more graceful in the female form, let them represent women. Let the head be decorated with flowers among the hair ; the neck be naked, to shew its true proportion ; and let a festoon of flowers fall carelessly over the breast, to hide the separation in the midst, and represent the fullness, and beautiful round, without coarseness or indecency.

The sculptors of this time require nothing so much as to be taught with decency. The necks of females, from their hands, are generally improper. We may refer them, for better information, to the present dress of the French, who shew all the beauty of the female breast, yet by a rose, or some other artificial flower, in the middle, take off every idea of immodesty. The human part of the figure thus finished, the scabbard comes into consideration. This receives the breast, and has a spiral line on each side at its top, where the arms seem to have been taken off. There is no part of the scabbard less beautiful than this, though custom, and the practice of the ancients, has rendered it essential. The festoon we direct to be thrown lightly over the breast, may be continued with ease, so as to hide a part of this. From this part the scabbard will consist of a front and two sides ; and it must be covered with sculpture.

A great deal of work should not be employed on this, because it is not the principal part of the design ; but they err who give it too little. The ridges should be plain but carefully wrought in that plainness ; and, for the ornament, it may be only a Mosaic, by light lines crossing one another, or this may be more ornamented : or, finally, the design may be varied. This Mosaic, when it consists only of lines, is very plain, and in such a Chimney as is here proposed, would be unworthy of the rest. The lightest ornament is by adding a kind of star at every intersection of the lines ; and the most that should ever be allowed, is by placing a small flower in the center of each lozenge of the Mosaic division. When these flowers are added, there should be no stars in the intersections of the lines ; and when there are no flowers or other ornament within, this should never be omitted. Thus is the general decoration of the scabbard to be determined ; but there yet remains to be considered that superior article of ornament, the varying the design upon this part. The least that is to be done in this way, is to place a rose in a small compartment in the middle of the scabbard ; and this, when the Mosaic is continued, will give an air of variety.

The other and more graceful method is, by dropping a leaf from the top down half way of the scabbard. This should be an acanthus leaf, because its shape corresponds, and no other is so handsome. The Mosaic division will then perfectly well answer for the other half, and may be carried up all the way on each side. It will be a farther grace to this scabbard,

scabbard, to let the foot of it rise from the plinth with a swelling within; and this may be very happily decorated also with a leaf. These figures thus finished, the rest is easy. A mantle-piece is to rest upon their heads, where it must project with a rounded outline; and both here and in the strait part it may be decorated with sculpture. The inner line of the Chimney-piece may be a rounded and handsome moulding, which at the top may be carried, according to the French manner, into an irregular arch. In the center of this a scroll may supply the place of a key-stone; and this spreading each way from that central part, may leave room for a basket of fruit, and terminate each way in a festoon: and then the rise of the mantle-piece being decorated with leaves and fanciful ornaments, the whole will be correspondent, and of a piece.

Of the Materials for this CHIMNEY-PIECE.

The rule we have laid down of allowing coloured marbles where there is little sculpture, and plain ones where there is more, holds very strongly here. We recommend this Chimney-piece to be constructed entirely of pure statuary marble, as that will most distinctly shew the work; and the eye, having no glare of colours to take it off, will be wholly kept upon that. However, as some think there is a deadness in this strict uniformity, we shall advise the student in what manner to give a decent variation.

The body of the Chimney-piece being of white marble, the scabbards of the termini may be of the green Anglesea kind, or of the common green and white Egyptian; and in this case it will be well to make the mouldings round the edge, of the same materials with the scabbard. The flower-basket may also be of the green marble; but the fruit and flowers in it should be white, for all the delicacy of the work will otherwise be lost in the veins and cloudings.

Of continued CHIMNEY-PIECES.

The student is now so far a master of the rules upon which the structure and decorations of Chimney-pieces are to be founded, that we may lead him with familiarity to the composition of those of a more complicated kind. These are such as we expressed before under the name of continued Chimney-pieces; and they require a more distinct consideration than, by the practice of modern architects, they seem to be aware.

It is no more than truth to determine from their conduct, that they have no other idea of this kind of Chimney-piece, than that it means a simple one, with something at the top of it. Some flutter of ornament, and some shape of a frame, they suppose are needful on this occasion; but farther they seem not to have carried their researches. One kind of ornament,

ornament, or one sort of frame, they apprehend will do as well as another; and when they have made, or otherwise possessed themselves of half a dozen figures for this purpose, they apply them at random, and seem to think of them, as the famous comedian did of his prologue and epilogue, that the epilogue might do for a prologue, or the prologue for an epilogue, and that either of them would serve any other play as well as that for which they were intended.

We do not produce these blemishes in our best buildings to ridicule, much less to injure those who invented them; and therefore conceal the names they would disgrace. It is for the service of our student we represent them in their proper colours. They are so frequent in good houses, and they pass so often without censure under the review of reputed judges, that, were it not for such caution, he might be led to think them right; and place them before him as examples for his conduct: at least as excuses for his own errors. We have told him before, that it is to very few of the structures of this age he is to look up for example; and we shall repeat the decision before made on a like occasion: that an error is not the less so, though justified by a thousand instances. Of this he may be sure, that the very eyes which overlook defects, will never be blind to beauties, and that he will ensure to himself, not only a greater, but an universal praise, by acting up to the rules of truth and propriety.

Longinus directs the orator, in order to arrive at excellence, to suppose the famous predecessors in the art are present; and upon all occasions to put himself in their place for the composition. Let the architect, who would arrive at excellence in his not less arduous or less honourable science, tread the same path. When he is about to lay down the design, let him consider well the occasion, and ask himself: what would Palladio have done in such a circumstance? When he has finished, let him demand, what would Vitruvius say were he present to examine this? It is by this method men who have arrived at excellence in any of the polite arts, have imbibed, as it were, the genius of their great predecessors. He must have indeed a cold imagination, who could design meanly or incorrectly when he supposed himself acting in the spirit of that reverend modern, or appealing to the judgment of that judicious antient.

Of the Propriety in the ORNAMENTS.

The first consideration which would rise in the mind thus warmed with the remembrance of those persons immortalized by the same science, would be propriety. Without this, beauty would be ridiculous; for, from the conduct of those whom, though unnamed, we have been obliged to load with so much unwilling censure, he will first consider by what means the whole will be most naturally suited to the room in which

it is to be placed; and next, in what manner the two parts (for they are in themselves distinct, though joined) will be best adapted to one another. With regard to the first article, we have in general observed already, that a continued Chimney-piece can only be proper where there are Ornaments of sculpture about the room: for otherwise there will be nothing with which it can correspond: therefore, against all other considerations, let him design at all times a simple Chimney piece for a room that is hung, and a continued one for a room that is finished any other way. No wainscot is or can be made without pannels; and it will be easy to make the upper part of a continued Chimney-piece correspond with them, let them be of whatsoever kind. This we would recommend to the attention of the builder, even in the plainest and meanest rooms. There will be a regularity in it which will never fail to please, and the expence nothing. In this case no more will be required than to form a regular design of an upper part for the Chimney-piece intended to be placed there, and to execute it with the common mouldings of the pannels. There will be no more expence in disposing them properly than improperly, regularly than irregularly; and yet the effect will be pleasing, and the architect will have credit.

He now understands, that the purpose of this work is to raise an Ornament like that of the other parts of the room from the Chimney-piece to the cieling; and in such manner to adapt this to the Chimney-piece itself, that it shall seem naturally to rise from it, and to be connected with it; that it shall be a regular and proportioned part of the chimney-work, at the same time that it is also a regular part of the Ornament of the room. This will always be easy to the architect who sets out upon just principles; for having, according to the rules we have laid down in the preceding book, suited the Chimney-piece itself to the rest of the room; these additional mouldings, or other Ornaments, when they are made to correspond with one of the two, will also agree with both, because they naturally agree with one another.

It would be otherwise with one who had set out without principles. If he had made a simple Chimney-piece too rich or too plain for the rest of the room, then the upper work, which continued it to the cieling, would add to the irregularity: for either it must be made to agree with the lower part of the Chimney, and would so disagree with the rest of the room; or to correspond with the finishings of the sides, and by that means disagree with the lower part of the Chimney. These are the accumulated irregularities which never fail to arise from an error in principle. Let them teach the young architect circumspection, and early regular method.

Of

Of enriching a continued CHIMNEY.

As the student will now understand, that the upper part of the continued Chimney-piece, that is, all which is above the place of the mangle-piece, is a kind of repetition of the work in the sides of the room. He will know very well in what manner to add proper beauties. Let him consider it is the first object that strikes the eye on entrance, and the most conspicuous part of the room; and, for that reason, while he gives it the same air with the rest, let him make it somewhat richer. We have observed, that in the plainest rooms it is to be only a continuation of the mouldings of the wainscot in a proper form: from this the first advance to elegance is the adding of a few more mouldings; and after that all the rest is easy. When the common mouldings of the wainscot have some sculpture, let those which are continued over the Chimney have more, as well as be laid in greater number; and to whatever degree of elegance the rest is carried, let this part exceed it. The continuation thus managed will have the air and aspect of a peculiar piece, while it is at the same time a regular and perfectly correspondent part of the whole finishing.

Rooms which are hung are debarred by the rules of the science from the advantage of this ornament; but for all other kinds it is very well adapted. Where the walls are plain stucco, this upper part of the Chimney-piece must have very little ornament: but even in that case, as the lower part will naturally be very plain, a light representation of its most conspicuous parts in the space above will be far from displeasing. This is a very rare case; but we would not have the student without his rule of conduct in any. Let him not suppose this circumstance of a room finished with plain stucco, to be a parallel case with that of one hung with paper or damask, and in which we limited him to the use of a simple Chimney. Here the space within the pannel over the Chimney being plain as the rest of the wall, at the same time it admits the grace of this addition, keeps up a similarity with the rest, without any thing improper in itself; but, in the other case, the great contrast in the colour and figures of the paper or silk would break in upon the intended composure of the whole, and the mouldings, whether in wood or stucco, would appear to be stuck on the paper, not to rise from it, as they will certainly appear to do from the stucco wall. The upper part of the Chimney-piece, which in the case of our plain stucco-wall shews itself only in what it is, that is, a light ornament continued from the lower work of the Chimney, will, where there is paper or silk, have the aspect of a frame; and these will appear as pictures in it. All know how poor this must look; since,

in

in the reality, what could be so mean as the thought of framing a piece of the hanging?

Indeed, if in a hung room it is intended to place a picture over the Chimney, the frame of it should be separate, and should not rise from the Chimney-piece below: whereas in other instances, where the continued Chimney-piece is proper, nothing is so elegant as to make its upper work serve as a frame for some elegant piece of painting. In this just examination we see, what might have appeared as an objection to our general rule, strengthens and supports it; and although in a plain stucco-room a continued Chimney-piece is proper, yet in one hung it is perfectly wrong.

Of suiting the UPPER WORK to the ROOM.

It appears that in all rooms, except such as are hung, a continued Chimney-piece may be allowed. In most it will be found more proper than a simple one; and in the more richly furnished apartments altogether necessary. We are about to consider the manner of accommodating the upper part of such a Chimney to the room: but we must here censure some modern works; and, without naming the workmen, caution our student against their errors. There have been some who have entertained a confused sense of the necessity of this great article, the conforming the Chimney-piece (when, from being carried to such a height, it becomes so conspicuous a part of the room) to the other ornaments. But the judicious reader will allow, that we have used a gentle term in calling these only confused notions, when he sees in what manner they have brought them into execution. In a room where the doors are decorated with an order, this idea of correspondence of parts has carried them to the placing coupled columns upon the Chimney piece in the continued or upper part of the work; resting upon a mantle-piece, which is supported by a scroll. It reminds one of the decoration of those theatres, where a Carriatic is supported by an Ionic column, and that rests upon a bracket. There is in this the double absurdity of placing the columns without support, and of giving them nothing to carry. They appear monstrous, because they are unfinished: they are too bulky, and too prominent for the place; and nothing can be more preposterous than this use of them. So far may error, in attempting what should seem right, carry those whose minds have not imbibed the true principles of the science.

A correspondence of parts is indeed the first principle of ornament; but, before a man pretends to use this, he must know what parts should correspond, or the attempt will only serve to betray him into absurdity. The ornaments of doors, and those of the Chimney, should certainly correspond; and we have before directed in what manner. But there is a place for every ornament; and, when it is out of that, it becomes a defect

fect, and not a beauty. When an order is employed in decorating a door, there should also be columns in the construction of the Chimney-piece; but they must be placed in the lower part: not in the upper. They must be upon the ground, not in the air. It is their natural position to rest upon the ground; and he who takes them out of that place in a Chimney-piece, is commonly guilty of an absurdity. When there are columns below in their proper place, it is still wrong to add any above; for they are not of the nature of those decorations which should have place there. They are too massy and uncouth. But if this placing them in the upper work over others in the lower, be wrong, the absurdity is tenfold in those instances we have named, where there is only the common ornament below: it would be as proper to stick them against the walls in other parts of the room.

When the correspondence of ornaments requires columns at the Chimney, let them always be placed as we have directed in treating of that article. In that case they rest upon the hearth, and they support the mantle-piece. This is natural; and so is the continued work above them; more natural than in any other case, because they afford it a just and proper support. It is this part of the Chimney that must correspond with the doors, and the ornament above is to agree with that of the other finishings of like height. These are mouldings of wainscot, or pannels of stucco, or the like divisions. It is with these the eye compares this upper part; and, while it corresponds with these in the nature of its ornaments, the shape and place, for in both these articles it differs from all, will sufficiently vary the whole.

What we have observed with respect to columns, holds universally in regard to the other ornaments of doors. The lower part of the Chimney ought always to hold a correspondence with them. This must not be so servile as to copy the parts or particular mouldings: but as we have directed, that when one of the orders is employed upon a door, another order should be used for the Chimney; upon the same principle we add, that whatever kind of ornaments are placed about the door, something of the same kind must be done in the lower part of the Chimney. Often this is to be carried through a great part of the lower work; but it is enough if the eye perceive it in the inner edge of the whole, or in any other conspicuous part. As this portion of the Chimney-piece is to be an improved resemblance of the door-cases, in the same manner the upper work is to bear a likeness in all its parts to the finishings of the rest of the room; but it is to be enriched beyond them.

The form it must carry will be that of a compartment, determined in breadth by the lower part of the Chimney, and in the height by the loftiness of the room. When the lower work of the Chimney is narrow, less labour should be employed upon the upper, for it will share the nar-

rowness of the bottom, and be incapable from thence of great dignity. Therefore, when the young architect sees a room that, from its other finishings, will require a rich continued Chimney-piece, let him set out with giving it a sufficient extent in breadth below. On this absolutely depends the breadth of the upper work, and consequently its dignity.

Of the UPPER WORK.

The student who understands the design and nature of the continuation of a Chimney-piece; where to use it, and in what manner and degree to adapt its ornaments to the particular purpose, may proceed to the designing its several parts. How far the construction of the lower part of the Chimney is concerned in this, we have shewn. A continuation of ornament may be carried up from any Chimney-piece whatsoever, the due care being taken to adapt it to the proper form of that lower part: and consequently, if that be proper, the whole will be of the same character. This may at any time be done occasionally; but we advise otherwise. We would not have our student design his Chimney, and then think of an upper part for it; but forming the whole as one work, and keeping in his eye all the parts while he is making the figure of each, he will that way alone render it compleat and uniform.

If he design an Upper Work of slight construction, let him make the lower part also of the lighter kind; but where he intends a great deal of ornament above, the first care must be for a sufficient solidity and decoration below: the general construction of the Chimney being the same when it is thus continued to the height of the room, and when it terminates at the mantle-piece, or its finishing course, we shall not repeat any thing here of the rules already laid down for its construction; but, supposing a Chimney-piece of the common kind, and of moderate expence, to be the lower part, consider the lighter and less expensive Upper Work suited to it. This Upper Work naturally represents a kind of frame; but it is not to be placed directly upon the mantle-piece, for in that case it would be either of an enormous height in proportion to the breadth, or it would not reach toward the ceiling in the manner which is the true purpose of these constructions. Therefore upon the mantle-piece let there be raised a course, pedestal high in proportion to the other parts of the Chimney. Let the outline of this be in the perpendicular, the same with that of the side of the Chimney-piece, not the extent of the mantle-piece. Thus it will seem supported by the side-work of the Chimney, and consequently in a condition to support the rest of the work.

Let this have its proper distinctions of base, die, and cap; and let there be some slight ornament of sculpture at those divisions. Upon this is to be raised the Upper work, whose height must be governed by that of the
room,

room, and its form a square, or long square. In this, when rightly constructed, there will be always some proper resemblance of the structure of the Chimney. Thus let the student begin, by raising from the extreme edge of the pedestal a perpendicular line, which will form the verge of a side corresponding each way with that of the Chimney-piece below; only that it must be narrower, because the Upper Work must always seem lighter than that below. These two sides are to support a cornice in the manner of another mantle-piece, and from the middle part of this is to be raised a pediment. This compleats the outline of the work: it may be made entire; but that is not right, because it gives an aspect of weight improper for an ornament that stands so high.

Of the two forms of the pediment, it may be either pointed or round; but whenever it is made entire, the pointed form should be preferred, because of the two it is lightest. This is a construction however which the judicious eye will always dislike; and there is not only more propriety, but more room for ornaments in a broken or open pediment. Let this be a determined point, that the pediment be open; and the lighter the work, the more necessity there is of its being so. As to the two forms, they are directed by the same rule. The rounded pediment is heavier, as well when open as entire; and therefore it should always be kept for the Chimney-pieces which have the heaviest ornaments; and the pointed for the lighter. The difference between these two kinds, in appearance of weight, is much greater when they are broken in this kind of work, than when they are entire; for the broken-pointed pediment ends at the abrupt line: but when the rounded or arched pediment is broken, the inner members are to be rolled in spirally; and this, at the same time that it is a great ornament, is an indication of weight, which we have directed the student to avoid, even in appearance, in the construction of the upper part of the present work. The student who has used his pencil as thus far directed, has now the outline of his whole work upon paper: a pedestal continued over the mantle-piece of a common Chimney supports two narrow sides; these are crowned with a handsome cornice, and from the midst of that rises a broken-pointed pediment.

Of the DECORATIONS.

This is the field, of which his genius is to make the most by the addition of ornament: and his judgment is to disclose itself in forming that ornament of a proper kind, such as will best suit a Chimney. Now, although the sides he has raised can very well support all that is above them; yet the cornice having the air of another mantle piece, will very well bear the appearance of farther support from a couple of scrolls; these may be decorated, each with an acanthus leaf falling down them, which
will

will display itself very happily, because of their waved outline; and in the broken pediment may be placed a vase: thus the larger and more obvious articles of ornament are laid in, and for all that can be added sculpture answers the purpose. We have declared against heavy ornaments in places so raised as the top of a continued Chimney-piece; but as the cornice in this case has the strength of a couple of scrolls, as brackets, the vase, though heavier than we should otherwise chuse, will have the appearance of a support. The sides terminated at the top by these scrolls, must not, in a Chimney of any tolerable degree of ornament, be left plain.

It will be easy to mark out a long compartment in each by sculpture, continued within a small distance of the two other sides and bottom: at the top of these two lines may join the scroll; and from the bottom of that ornament may be dropt a light festoon almost to the bottom. This will give sufficient beauty to the sides, and the pannel marked in as just directed, will seem a frame to it. The vase may also be loaded with fruit and flowers; and these may be suffered to run over on each side in a light festoon, continued in a bended line each way to the angle made by the inside of the pediment and the cornice.

Thus a good form of a continued work is laid in; but there is too much vacancy within. It is intended that the space shall be large, but it is now too large. The designer must reduce it; and the means of this will compleat the ornaments. Let him place within this a kind of frame; let the sides of it join the inner edge of the two upright parts which support the cornice. At their tops let them rise to the cornice, and at their bottoms rest upon the pedestal raised over the mantle-piece: thus let the two sides of the intended frame fill the space, but let the outline of each of the ends recede a little from the inner line of the cornice at top, and from the cap of the pedestal at the bottom. This will have a double advantage: it will at once give a relief and lightness to the general work, and a swelling to the corners that will be very agreeable.

This frame, for such a work of moderate expence as we here intend, may consist of an outer and an inner moulding, ornamented with light sculpture; and the middle space with fret. The corners, which swell up and down, may receive a rose, or other flower; and thus the frame is compleated; the space is reduced to a moderate proportion, and all appears uniform and rational. If any thing more be intended, it must be given by some additional sculpture. The cornice and its pediment are the proper scenes for this: their mouldings will receive the ornaments of the chissel, and shew them very conspicuously. This done, the only blank will appear in the face of the pedestal, which rises from the mantle-piece, and supports the upper work; and it will be easy to dispose upon that any lighter or richer ornament, according to the occasion.

Of

Of the richer continued CHIMNEY-PIECE.

We have said already, that a due breadth is essential to dignity in the upper work of these Chimnies; therefore let him begin by designing a Chimney of due extent below; and, as there cannot be this needful dignity without some weight, let him give the lower part a solidity to support it. In this view, when he has designed the lower part in the usual way, let him add breadth to its outline, and solidity with ornament.

Of the ORNAMENTS.

Festoons on the sides of the Chimney are the principal ornaments of the lower parts. Let them be made rich, and wrought with large flowers. Let the moulding of the inner part be also decorated with some sculpture, and no more will be required in this place. The mouldings, and other parts of the Chimney-piece below, must thus be enriched by proper sculpture, that they may correspond with the work above. The particular directions on this head need not be repeated here, as they are to be found in treating of plain or simple Chimney-pieces. The upper work is the proper business of this place, and to that the student is now to raise his imagination. He has the form of a frame, supporting a cornice, and upon that an open pediment; he is to fill the open space left there, and to give something correspondent to it below, and he is to enrich the frame.

These are the three points. And with regard to the first or most essential, the proper direction is, that whatever be placed in that opening, be light. The frame in this case supports the cornice on which the pediment is raised, without the assistance of two regular sides, therefore less weight must be added, because the support is less. A vase, though proper there, would have an aspect of too much weight here; and nothing is so proper as a shield, surrounded with some loose ornament. This, with a sufficient bigness, will have little weight, and there may fall from its sides, as from the top of the vase, festoons of flowers; these may either be fast upon the flat of the cornice, or continued to the angle, at the pleasure of the sculptor; it is indifferent in point of propriety.

Let our designer now review his drawing; he will see that the common ornaments of the tablet over the centre of the fire-place, and the shield at top, give an air of nakedness to the bottom of the frame. This must not be suffered in a piece of work intended to be so ornamental; some figure must be considered to fill it. The student has the whole range of nature for his scope and compass, and from among the animal kind may select what he pleases. A base may supply the place, or any form of a living creature; but those figures are most proper in which there is the greatest freedom.

Thus much finished, there is only the consideration of the frame, and its ornament is easily appropriated. The outside should be enriched with large and bold sculpture, and the inner moulding should be wrought with care. From the square of the upper corner there may fall a scroll and festoon sideways; these will finish the design. They must be light, because there is little space for them; but they will have a very good effect; for, beside the filling a very disagreeable blank, the scrolls, small as they are, will yet have an aspect of supporting the square corners which hold up the cornice.

Of simple CHIMNEY-PIECES, with various ORNAMENTS.

The student knows we understand, by a simple Chimney, one which terminates at the mantle-piece, and is the proper kind for a parlour that is hung with paper. It is not limited to this alone, but may be a fit ornament in any room not of the most magnificent kind; but the propriety is in the use we have named. Variety of forms and ornaments must be considered by the architect for this purpose; and to those we have given, we shall now add some others.

We will suppose a plain and not large room is hung, and is to have a Chimney suited to it; the orders we will suppose are by the proprietor excluded, and perhaps, by a regular consideration, the room not being of magnificence to renew them. The owner is tired of the same dull repetition he sees in common rooms; and he desires, though, without a great expence, to have something handsome and new. Thus much presumed, let the designer mark in his whole space of extent for the intended Chimney, and within that outline let him thus begin the construction of the several parts. From the hearth let him raise a bold square plinth to the measure of the outliee, and somewhat backward. Just within this, and more projecting forward, let him raise another plinth of the same height, and somewhat more in breadth. These are the proper foundations of the work. Upon the inner plinth, on each side, let him raise a plain perpendicular piece, with a handsome moulding on the inner edge, and a slip of plain marble within that: let the rest of these two sides be perfectly plain, and for the top lay on such another piece, terminated by a moulding inward; and for the rest admitting no ornament but a good polish.

Thus is laid the foundation of our Chimney-piece; this is the simplest and plainest form in which such a piece of work could be constructed; for these three parts make a kind of Chimney-piece alone: and from this the student may learn, that the happiest ornaments are those added to plain propriety. On the outer plinth, which is placed somewhat backward, raise on each side a scroll of the usual form; let its head be level
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with the aperture of the Chimney, or lower edge of the upper-piece; and let it here swell into roundness in the usual way; thence continuing hollow to the middle, and then swelling out a little again for the foot by way of support. Upon the head of this scroll, on each side, let a plain piece rest, of the breadth of the upper piece of the frame, and let it have a moulding when it rests upon the head of the scroll, which will answer exactly in this disposition to the moulding on the lower edge of this part. Thus is the Chimney carried in a plain way (for we shall speak of its few ornaments afterwards) up to the due height of the frame; and upon the level top of it is to rest the mantle-piece. This must be correspondent to the lower part; that is, it must be handsome without great expence, and singular without absurdity.

We have contrived for a various projection of the parts in the bringing forward of the sides; it will be well to make it consist only of a freeze and cornice; the plain upper piece of the frame, and the correspondent small piece over the scrolls, standing to the eye in the place of an architrave. It will not be easy or proper to give the cornice any more than two projections; that is, its whole level face uniform, and the parts over the two scrolls receding. The propriety of rule ties us down to this; but it is not so in the freeze; that, instead of three, may be made to consist of seven parts; and though the projections are in reality but two, they will appear numerous from their alternate mixture, and will have all the force and charm of variety. The two sides project beyond the scrolls. Let a piece of the same breadth be continued over these, and let it project to their level; let the whole freeze beside be of the level of the piece above the scroll, and in the center let there be a tablet projecting to the level of the top pieces over the sides. This will give the appearance of seven different projections, though in reality there are only two, since no two that stand together are alike. Indeed they may at the pleasure of the architect be carried farther, for the tablet in the middle may have a projection different from that of the pieces over the sides; and the parts of the freeze over the scrolls may recede deeper than the common course of the freeze. This is in the pleasure of the architect; but we advise the former method, that the whole plain course of the freeze be of the same level, and the projections be equal.

Let the designer bestow a due attention upon this part of the work, for it is all that requires invention, the cornice demanding no particular thought for its construction. Of the ornaments we shall speak separately, so that all we have further to consider is the cornice, in whose form there need be nothing particular, nor is any other care required than to stop the plain force with a sharp edge, where it terminates at the recess over the scrolls, and to work the several mouldings with truth.

Of the ORNAMENTS.

These most regard the freeze, and, of all its parts, the central tablet is the principal; that will attract the eye first, and detain it longest, and consequently upon that it is needful to bestow the greatest attention. With respect to its form, that of an oblong square would first come into the architect's thought, but something may properly be added to it. The freeze cannot be very deep in a Chimney-piece of this kind; and, as it is proper to give a conspicuous air to the ornament of this part, nothing can be more judicious than to drop it into the upper member of the frame. The whole tablet may be let into this upper piece of the frame, but it will then appear heavy. It will look like a botch, and seem to say the freeze was ill constructed for its ornaments. This must be avoided by all means, for as it is fit the architect should in his own mind lay the plan for the whole together, it is also fit that the eye should discover at once that there had been such a contrivance. To this purpose, in the present instance, let the tablet drop into the upper member of the frame only in the middle, the two side parts being of the breadth of the freeze. This will give the tablet itself a more handsome shape than that of a plain square, and will suit it very happily to receive the ornament that is most proper for it. This may be of various kinds, but there is none so fit as a head; and as this will fill the deeper space, and leave almost a necessity of short festoons on the two sides where the tablet is less deep, the two faces most happily suited to the purpose are those of Bacchus or Flora. Round the one may be an intermingled wreath of grapes and foliage among the hair, which may run off each side to fill the narrower part of the tablet with a fruit-festoon, and round the other a wreath of roses and anemonies, which may in the same manner be continued into that vacant part. Pomona may take the place of Bacchus, but the fruits are properly of the larger kind; or Ceres may be placed instead of Flora, but her ornaments are less elegant. One of these, after all consideration, will be found the best. Where there is a plain tablet, an Apollo's head is very proper, because of the rays; but it would be irregular here.

The tablet thus covered, the two spaces on each side of it come under consideration. These are oblong, and of moderate breadth: they will receive very happily a cornucopia in each. As the tablet is crowded with flowers and fruit to the edges, let the naked ends of the horns come to that part; and as it will be proper to give some peculiar ornament to the piece over each side which terminates the space, that will not be of the flower or fruit kind; the broad mouth of the horn may each way terminate

minate a little short of that, and pour out every way its fruit and other treasures. The student will see, that, in the decoration of this freeze, we study diversity as well as beauty. Hitherto the several parts are sufficiently distinguished from one another : the face in the center is well surrounded with flowers ; the curled ends of the horns come near that ; and separate to a sufficient distance the treasures they pour out at the other end of the space. The piece over the side, which separates this from the small receding part of the freeze over each scroll, may be decorated with a radiant star ; and then, in that receding part. it will be very proper to place a bunch of grapes, or some other conspicuous cluster of fruits. Indeed, if a Bacchus's head be placed on the tablet, we by all means recommend grapes here, preferably to any other ornament ; and, on the same account, if the head were a Flora, we should advise the placing on the parts a rose, or some other conspicuous and large flower ; for the distance between this part and the tablet, with the several intervening objects sufficiently prevent it being considered as a repetition ; and, when that danger is not in the way, there is a happiness instead of a fault in this method, because it continues the subject ; and there is a pleasure in seeing under what variety the same thought and design may be preserved. The principal affair of the freeze being thus determined, little is required for the decoration of the other parts. The scrolls must have their common spiral upon the shoulder ; and as the only vacant space will then be in the side under the volute of that part, a large flower may very happily be placed there, from which there may be dropped a light and small festoon. All that need be done farther, is the decorating some of the mouldings with sculpture. The cornice will be the principal scene of this decoration ; and as it is most in sight, there will be propriety in giving it the greater share of these ornaments. The moulding that surrounds the frame on the inside of the Chimney may also have the same decoration.

Of a MARINE CHIMNEY-PIECE.

By this term is meant a Chimney-piece, all the ornaments of which are taken from Marine, or sea subjects. These are in themselves extremely numerous, full of beauty, and full of variety. The whole scope and series of them are in the choice of the architect on such an occasion ; and his judgment is to display itself in a proper choice among the multiplicity of forms, and a just assortment and continuation of those he chooses. The first direction we shall give the young architect on this head, is to review the variety of nature, and take his choice among them. Let him not limit his fancy by the small number that have been used by others : there are not only more, but better. The architects of the present time do not sufficiently study nature ; and it is in the works alone of those who

have professedly treated of these subjects, that he who would be eminent in this part of his business must study the means. This path rightly followed, there will be a source of beauty and variety opened, that no practice can exhaust; and from such stores, not on the imitation of the works of others, we would have the architect go upon the design of this Chimney.

Let him, as usual, mark in a general outline to circumscribe the compass it should fill; and within this, upon the level of the hearth, let him first raise two small plinths, as in the preceding design; only that here the greater one being destined for the support of the ornamented part, must be considerably larger than the other. On the first of these let him raise two perpendicular sides, consisting only of a few large mouldings, with a flat ledge within them; and upon these let there rest a third piece of the same kind and form. This makes what may be called the frame of the Chimney-work; and about this are to be disposed the ornaments. Upon the second, or broader plinth, on each side, which are to recede a little for the advantage of light and shade, let him raise two flat and upright pieces; to be the field, whereon to place the ornaments. These are to terminate, as the scroll in the other design, at the height of the opening of the Chimney; and they are there to be crowned each with its head of mouldings. These may be more considerable than those of the other Chimney-piece, because the pieces which they terminate are the most considerable part.

Thus is the body of the Chimney-piece to be designed; and upon this level top made by the frame, and the outside pieces, is to be raised the mantle-piece. This is to consist of a freeze and cornice; and for the reception of the intended ornaments, the freeze must be broad. Thus is finished the plain form of the mantle-piece, and its support. The Chimney-piece finished thus perfectly plain, would be of no disagreeable form; but we propose to enrich it with very elegant, though not expensive, ornaments.

Of the Decorations of this CHIMNEY-PIECE.

There are two parts in this work allotted for the reception of ornament, the flat pieces carved up the sides, and the freeze under the corner of the mantle-piece. In these pieces the center of the freeze is understood to be the point of principal ornament: it is there the tablet is placed in those Chimney-pieces which receive that addition; and in others the principal figure naturally takes its place where such a tablet would stand. The most natural, as well as the most common ornament in this place, is a head of some kind; and the rest of the freeze is usually, and not ungracefully, filled with a couple of festoons that rise from it. We are not
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in this instance about to prevent the student from following the course of custom, but would have him compose his festoons of such subjects as are most suited to the occasion, and chuse his head from those kinds which have correspondence with the rest. In general, festoon are made of flowers and fruits; and the head, placed as a decoration to the Chimney-piece, is that of some heathen deity. Neptune's head might answer in this place, or that of a sea-nymph; but the first would be too coarse for the work, and the latter might be misunderstood. It will therefore be most proper to place there the head of some large fish; not of the shark, because the armour of its mouth naturally creates terror; but that of some more inoffensive kind, the whale, or the figure heralds give of the dolphins.

These will not fail to please every eye, when the rest of the Chimney is decorated in the intended manner; but if either of these suit the taste of the architect, he may give a figure from fancy, only taking care that it resemble so much a fish's head, that every eye may distinguish that it is designed for one. This principal figure being placed in the centre of the freeze, the two sides are to be filled with festoons. Let the architect form a general outline of these, marking their breadth; and let him bring each from one side of the head; and, after dropping it down in the middle, let him raise up the other end to the top of the freeze at its extremity. This is to be the course of the festoon; but with respect to its parts, they should be correspondent to the general design, and made of shells. Of these the sea affords a variety altogether endless; and among them are a thousand different forms, which may be happily twilled together in this design. The body of the festoon may be thus diversified with the figures of the shells; and the pearl-oyster being introduced among the rest, may scatter over the edge its glittering treasures. The sides are to be decorated with the same kind of subjects: but as they have a different direction, those objects may be placed in a various manner. At the top of each may very properly be placed a scallop, and from its base may hang a festoon of other shells: these may be chosen so as to diversify the whole by their unlikeliness to others, as well as to exhibit a pleasing number of forms: and upon the plinth of this piece may rest a large conch, turning up its wide and open mouth, as if gaping for the dropping festoon, loaded with smaller shells, and scattered pearls, as in the freeze.

There will remain a square piece undecorated at the top of each of these sides above their mouldings, and upon a level with the freeze. This will admit a peculiar beauty, by means of the diversity of light and shade afforded by its receding; and in this should also be placed one large shell. For the rest nothing can be added, but sculpture to the mouldings; and this we advise not to be too lavishly allowed them. They should not be left altogether plain, because the quantity of work upon the sides requires some decoration in these parts; but neither should the chissel be allowed

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to rest too long upon them. They should not be plain, because that would ill agree with the rest ; and they should not be much adorned, because the eye is intended to be detained but little upon them : the peculiar ornaments of the sides being the intended objects of the attention. Little need be said with regard to the materials of which this Chimney should be made. The quantity of ornament, and its nature, require, that there should be no confusion in the lights and shadows. This declares a marble of one colour to be the only kind fit for the purpose ; and of these sorts there is none so proper as the plain white.

Of a small CHIMNEY-PIECE with Sculptured Mouldings.

The last design was of a kind where the beauty of the work results from the variety of added ornaments. What we are here to treat of has its elegance from a plainer, more familiar, and less expensive source ; and yet in many cases is full as pleasing. That was fit for particular purposes ; for the study of an admirer, or the library of a naturalist, where it might stand independant of every thing else, and yet be sure to please. It could not fail to affect the imagination by its novelty, nor to please by the variety of its ornaments, and by the beauty of the single figures, as well as by their disposition. That which we here propose is one of a more generally useful kind ; and we shall introduce the reader to it as to the others, by forming a supposition of its place and use.

A parlour, we will suppose, is to be decorated with Sculptured Mouldings upon wainscot pannels, and a Chimney is to be suited to it in point of expence and figure. This must have the same kind of decorations, and its ornaments of a higher order. Whatever be allowed in this way, must not be repugnant to it. This is the kind of work we propose here ; and the student must thus design it. Columns would be too noble, and they would not suit the room : fanciful ornaments are not to be received, because the rest of the finishings are of a plain, though handsome, kind ; and the designer has only the form of a common Chimney-piece in his power, and can use nothing so well as scrolls to support the mantle-piece. Let him mark a general outline for the whole, and then consider its source of ornament.

As many things are with-held, he is to make the most of those which are free to him : and let him first consider the advantages that may arise from light and shadow. Let him, upon the level of the hearth, lay in three square plinths ; the inner one largest, and most forward, and the other two gradually smaller, and gradually receding. Thus there will be the foundation of three general projections in the upper work ; and, in the principal of these, there may, from its breadth, be some other variations of the same kind. Let him now begin with the inner plinth, and
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raise upon it on each side a perpendicular, formed of three pieces, in three different projections; that which recedes most being inward. These raised, let there be laid over them a third of the same form. This as in the preceding instances, makes the frame or first work of the Chimney. Over this let him design the flat plate as a freeze; and then beginning from the bottom again, let him raise his second perpendicular piece. This, from the decreased bigness of the plinth, will be narrower than the former, and it must be terminated at the top by a handsome scroll, whose head must be on a level with the top of the freeze. The third perpendicular is now to be raised upon the most backward plinth; and this must be according to that part narrower than either of the others; and must terminate plain at the same height with the head of the scroll and the freeze. Thus there will be a regular extended surface, upon which our student is to design the cornice for his mantle-piece; in which his care must be, to strike the several parts and mouldings with truth, according to the directions given before under their various heads. Thus will rise the whole form and figure of a Chimney-piece; and, to finish it to the purpose we have here proposed, there will require only a natural succession of ornaments along the parts and places where they will be most conspicuous.

Of the DECORATIONS of such a CHIMNEY.

The purpose being to suit this Chimney-piece to a room where the mouldings of the wainscot are carved, the mouldings here must have the same ornament. There will be two upon the inner form of the Chimney-piece, which will very properly receive the chissel; and these being separated by a broad-piece, which is plain, may be enriched as highly as the artist pleases. The beauty of the mouldings will be seen distinctly, if separated by this plainness; but when there is sculpture in this intermediate part, the eye is lost and bewildered, and sees nothing distinctly. The mouldings of the cornice are next: to these there is to be allowed a great deal of sculpture. It is the most conspicuous part, and for that reason demands to be made the most elegant. It is also upon a level with the eye standing, and will be considered more naturally than any other part in the same view with those mouldings of the wainscot, with which it is the art of the Architect to make it correspond. The great judgment will be, in this place, to throw in the needful quantity of ornament without confusion. The great beauty of carved mouldings is to be seen distinctly. To this purpose nothing is so useful as the intervention of plain parts. When the quantity of sculpture required does not admit of that relief to the eye, the greatest care must be in varying the kind of sculpture on the several parts, so that the difference of the figure in the several members may occasion the eye to see them all distinctly. The mouldings

thus decorated, there remains but little to the finishing this piece. Two parts alone are vacant that would bear ornament; these are the freeze, and the two upright pieces, which are terminated by the scrolls.

In the freeze the ornament must not be heavy, yet it must be conspicuous. The head of some heathen deity, crowned with a wreath of flowers, will very well answer the purpose in the centre; and from this, on each side, must be continued a festoon of large loose work, nearly to the extremes. The top of the scroll may very properly be ornamented with a scollop shell; and its natural riches will be a sufficient decoration to the body of it. The bottom may be covered with the end of an acanthus leaf, and from this may drop a festoon of flowers: these must have a moderate projection, and the care of the designer should be to form the festoon of such as have no small parts. The projection of the inner part will be some defence to it, but, notwithstanding that, it is in a place where there is too much probability of accident. This is a thing that ought to be much more considered in sculpture than it is. The place where the work is to stand should be regarded, that the accidents may be foreseen to which it is liable, and the parts composed accordingly, nothing tender being admitted where there must come violence.

With regard to the materials of which this Chimney-piece should be composed, the quantity of sculpture determines that point. There is difficulty in so managing this in any manner, that the merit of the artist may not be lost in the confusion of the objects from their nearness; and if a coloured or variegated marble were employed, that confusion would be inevitable; therefore plain white is fittest for this purpose. Indeed the universal rule suits well with nature; for as the variegated marbles do not advantageously admit sculpture, neither do they require it, their mixture of tints giving them beauty of another kind.

Of a CHIMNEY-PIECE for a Room more enriched.

We last considered the kind of Chimney that would be proper for a room where the mouldings of the wainscot pannels were decorated with sculpture, without any other considerable addition; we shall carry our reader's imagination a little higher in the same way; and suppose, that beside the sculpture of the mouldings, the room has farther decoration of the same kind; the Chimney must be proportioned to this; and we shall here consider the form that will be most proper. The same general shape with the last must be right, because the decorations of the room are of the same kind; but as there is more required in this case, there must be more extent for the reception of the ornament. This is the first principle: the Chimney-piece must be larger, and there must be a greater field
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for decoration. The lights and shadows must be next considered, and, after the designer shall have drawn his general outline, he must begin to provide for this by different projections.

Three plinths, in different degrees of projection, he must first mark in, as in the preceding; but in these the third or most remote must shew itself between the first and second very far back, and the middle one or second must itself have a different projection, the middle of it standing much forwarder than the two sides. We shall shew the use of this in the superstructure; let the student begin here, and he will see the advantage in point of light and shadow, that must attend such a mixed projection of the several parts. Upon the first of these let him raise on each side a perpendicular piece of its breadth terminated each way by a handsome moulding; and, laying another piece of the same form and composition over them, from one to the other, he will have then the frame, or first work of the Chimney. The second piece, as we have named already, is not to rise close to this; the third, coming behind it in form of a back pilaster fashion, is to separate it a little, and there is then to be raised upon the middle or most projecting part of the bottom, a scabbard of that kind, which holds the figures of the termini; and from the hinder part of it, which projects less, let him raise a perpendicular piece, which is to serve as a back to the figure in the middle, and shall be all the way of equal breadth. We have before mentioned the continued piece of smallest projection, which, running behind this, serves as a back to the whole that is raised on the last mentioned plinth, and terminates pedestal-fashion at the height of the first frame of the Chimney. Thus much prepared, the figure which is to rise on the middle part of this second plinth, and is to be the principal of the work, is to be designed.

The back we have proposed for this running of equal breadth up from the whole of this plinth, must cut through the mouldings of the pilaster back, and rise to such a height above them, that a plain piece being laid over the frame by way of freeze, its top shall be level with theirs. These are uniformly to support the cornice of the mantle-piece. We have directed the student to begin the form of a scabbard from the projecting part of the middle plinth, equal to it in breadth at the base. The outline of this must be formed by two divergent lines, which widening upwards, must a little above the lower moulding of general back unite with those lines which form the particular back of the figures drawn from the two sides of this plinth. This will have a very happy effect.

Now, directly under the mantle-piece let there be drawn a female face, crowned with a fancied head-dress, and ornamented with flowing hair. The neck and breast must be naked below this; and they will naturally
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enough fill the square piece, where the two lines which form the scabbard are lost. In this place is to begin the scabbard, and a little foliage may very well rise on each side, and in the middle drop lower, forming a kind of ornament above the sides of the breast, and concealing the separation. Hence is to be continued the scabbard downwards ; and this should in the present instance be decorated with a rich festoon for two-thirds of its length, and on the lower part covered with an acanthus leaf, raised for that purpose from the surface of the plinth. Over the head, and upon the flat piece, continued from one of them to the other, is to be carried the cornice, which projecting on each side over the heads, and receding behind, will have a great deal of variety in light and shade ; and nothing will now be wanting but the ornaments.

Of the ORNAMENTS of this CHIMNEY.

It is intended in the original design of this Chimney, that it shall have a great deal of decoration. Heads placed above the scabbards in the middle parts, are a great article of this elegance ; and what remains to be done, is to give a proper decoration to the freeze, or flat piece, over the frame, and to add the advantage of sculpture to the mouldings. In the center of this piece it will be right to place a tablet, as that addition never fails to give a look of finishing. In the centre of this is to be formed some large and conspicuous ornament. It must not be a head in this Chimney-piece, because that would be a repetition of what is already at the sides. A shell will be very proper for the purpose, and as it should be of some kind that spreads considerably without projection, none will be so fit as the scollop. For the construction of this, we shall refer the sculptor to an original much superior to all the models of old Greece : let him lay before him, as he works, a natural scollop shell ; and if he will with due attention follow the work of nature in the several ribs and furrows which her distinct and accurate hand has marked upon its surface, he will command universal admiration. This is the everlasting lesson we give the sculptor. Nature is in all these cases ready at hand ; and we shall not fear to tell him, that as much praise may be obtained by mimicking a single shell, as by copying the Belvidere Apollo.

From each side of this shell should be carried a festoon to fill the rest of the tablet ; and as nothing can so properly decorate the two spaces of the freeze on the two sides of this tablet, there may be a great deal of merit in so disposing the inner point of each, that although it be in reality distinct, it shall seem a continuation each way of the festoon on the tablet. The remaining ornament of this Chimney-piece must depend upon the sculpture of the mouldings ; and in this the same care must be taken, as in the preceding instance, that this be varied in so careful a manner,
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that the several parts tend to set off one another, not to confuse the eye that is detained upon them. The great caution in this respect will be required at the cornice, for in that part the sculpture will be close. The two mouldings we have directed to be given to the three pieces which constitute the inner work or first frame, must be cut into a bold and strong elegance of this kind; and as the separation is considerable, we shall allow in this what we declared against in the other, that is, some ornament on the piece between. This must be light, and consist of large parts, and by this means it will at once have an aspect of diversity, and will not confuse the sight.

Of a CHIMNEY-PIECE and WIND-DIAL.

We shall close the article of Chimney-pieces with one of the continued kinds: in which, beside the singularity, there is use. Every one knows, that from a vane at the top of a house, turning according to the course of the wind, a dial may be made, with its hand, which answering directly to all the motions and changes above, shall point to those divisions on which are marked the several points of the compass. This is familiar to every one on the outsides of buildings, from that which is so wrought at Buckingham-house, now the queen's palace; but the most useful method is to place the dial within doors. Those who are to go out of the house to know the course of the wind, may look at the vane itself; but there is a great deal of convenience in bringing that indication into a room of the house. When a thing of this kind is proposed, the first business of the designer is to remember, that every room is not fit for it. A wind-dial in a dining-room would be an odd kind of ornament, and much more improper, would it be to place it in a more elegant apartment. The study of a sea-officer, or other curious person, or the breakfasting-room of a sportsman, are the proper places.

Of the Construction of this CHIMNEY-PIECE.

Continued Chimney-pieces are in a manner devoted to the finest rooms in a house, and are therefore in great propriety covered with a profusion of ornament; but in this, which is particular in deviating from that rule, the first principle is, to omit the thought of such accumulated decoration. The room, in either of these cases, is not of that highly enriched kind; nor is the dial itself, though it may be rendered far from unpleasing to the eye, a piece of ornament at all like the others, of which we have treated. For these reasons the design of the lower work in this Chimney must be solid, without too much ornament; and all that belongs to the continued part must partake of the same character. Thus much premised, that the student may understand every article, and its

reason, as we proceed in the design, we shall consider separately the two parts; or the Chimney-piece intended to support this singular superstructure, and the upper work itself. We have observed in general, that the upper part in a continued Chimney-piece should be light; and for that reason have on all common occasions excluded the use of the orders. But this is a kind altogether singular. Its construction will therefore afford an exception from that rule, very allowable in its own nature; and as we have directed that the whole of this upper work should be proportioned to the design, we shall here allow an order in the superstructure, and that not of the lighter kind.

Of the lower Part in this CHIMNEY-PIECE.

The student must understand, that he is to design on this occasion a lower part of a continued Chimney-piece, whose character must be strength, and whose ornaments moderate. It is to be the decoration of a room where the taste of high finishing has not entered, and it is to support a plain, but solid superstructure. Let him, when he has considered the extent of the room, draw first a general outline of the whole; and separating the under part, of which we treat here from the other, let him begin with the mark of a couple of sides considerably broad in proportion to the height of this lower part. No matter that they have an air of massyness before the upper part is shadowed in; as soon as a Doric column is placed over each, the reason will be evident, and what might seem in the imperfect view an error, will become a beauty. Let him begin by designing his plinth; let this be continued for the support of the frame and general back, and let it project at an equal distance from the part where the rim of the frame will come, and the verge, that it may support an upright piece, whose projection will give it an air of solidity beyond the rest, and over whose axis is to rest that of the Doric column. The plinth thus designed, let him begin by raising on its nearer edge two upright pieces for the first frame: let these be narrow, and terminated outward by a thick moulding. This will give an air of strength, more than if they were broader and more flat, and that is the idea carefully to be entertained in the mind thro' this whole design. On the outside of these must be contained the general back, pilaster-fashion, and in the midst of this let there be raised, upon the projecting of the plinth, an upright of solid aspect, which is to run up beyond the sides of the frame to the cornice.

These parts laid in, let a plain piece be marked for covering the frame to the height of the tops of these two last mentioned uprights: and thus there will be a level surface, on which to rest the cornice: beyond the uprights there must also be continued a piece over the top of the back, which ended by a moulding running in a line with the upper one of the frame.

frame ; and thus is the whole body of the Chimney-piece framed in this lower part, to the place where it is to be crowned with the mantle-piece. This is to project over the uprights, that is, under the pedestals of the Doric columns ; and a pediment may be raised from its center. These variations will give it a great advantage, from the disposition of the parts, and the changes of light and shade, and that without the introduction of any improper ornament. The pediment must be of the open kind, and must receive a bust.

Of the ORNAMENTS of this CHIMNEY-PIECE.

Beside the mouldings, which will very well bear moderate sculpture, there is one conspicuous part that requires ornament. This is the freeze or flat piece over the upper member of the frame ; and there will also be room for something on the bodies of the two uprights, which are immediately under the columns. As for the ornaments of the freeze, there is no absolute necessity for a tablet to receive those in the midst ; yet it will in general be advantageous. They should consist of large and solid parts, to answer properly to the character of the rest of the Chimney-piece ; and as we have given two or three different occasions on which it may be proper to introduce this kind of Chimney, we shall observe, that they ought to be selected out of that part of nature wherewith the proprietor is most concerned.

If the breakfasting-room of a sportsman were the place for the Chimney, we should direct guns and nets to be represented on the tablet, and wild game on the side-spaces : but it will be best to suppose it answering the noblest purposes, and placed in the library of a sea-commander. In this case the subjects proper to be introduced are of another kind ; and, happily for the sculptor, they are such as will best become his art. There is a vast field here, as in all the instances we have named before on like occasions, for the sculptor to receive as models, but his art, which should depend on nature, loses sight of her entirely. The heralds animals are not more contemptible than the eggs and anchors of our best sculptors ; so remits are they even in the most common parts ; and in all others, tho' nature is before them, they regard only the representations they find in former works. These are few, imperfect, and obscure ; while the variety is endless in nature herself, and nothing so easy as the imitating her. There is merit in novelty ; and this is the natural path to acquire that praise. The artist will find an inexhaustible store for it in these instances ; and he will stand very far above all censure, when he can appeal to nature, and to the representations of her several forms in the writings of those who have professedly studied them. It is for this reason we so often and so earnestly recommend to the architect, who is to design ornament, and the sculptor, who is to execute them, the study of nature.

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If he would task his hand to the highest of its power, let him, as well as art can mimic nature, trace in this work the accumulated rays that in distinct assortments cover the star stone. To these let him add, in review at least, the madrepera, or spungy striated, and starry white coral; the eschara, whose netted substance tires the eye, while not one fibre loses its place or office; to these the pearly ormus, and the round-headed acetabulum add their various, distinct, and always admired forms. These, and innumerable more, which the sea covers from common eyes, naturalists have dragged up to light, and their forms far exceed all the fanciful figures that modern genius, or even the idolised fancy of antiquity have ever given us. These are the subjects of which the festoons on the tablet in this instance should be formed, and they are ready for a thousand others. Instead of a composition of small subjects, fill the vacant side-spaces of the tablet with a whale or dolphin. The massyness of such a figure will contribute with all the rest to the ideas of strength and firmness, and thus will the decoration of the principal part in the lower work be finished.

Of the DECORATION for the rest of the lower Part.

Next after the freeze, and its tablet, come under consideration the two uprights, which stand under the columns in the superstructure. Let the top of each be covered with some broad and well shaped leaf, and let the body be surrounded by a plain moulding. This will give a kind of oblong pannel in the front of each, and down the greatest part of its length may be carried a festoon; and let these festoons be composed of stars, waves, pearls and acetabula, and let the leaf he throws upon the top of each be of the sea kind also.

Those whom our artists affect to follow copied nature. The first rose introduced to sculpture was taken from the bush, and there remains to this time its most perfect model. It is so in all the others; and every carver has power to refer to the originals. Instead of this the forms are transferred with little regularity from one piece of work to another, till, though we see in every instance the same shapes, it is not easy to say what they are. The anemony is in spring open to the imitation of the sculptor, and what comparison can be made between that flower from the gardens, and its best representation from the chissel? This copying one another is the reason of the acknowledged decay in the art; and there is but this method we propose to restore it to the first lustre. The freeze, and this part of the Chimney being dispatched, the other ornaments are few. A little common sculpture on the mouldings is all there requires in the cornice; and the bust in the pediment should be appropriated to the rest of the work, a Neptune.

Of

Of the SUPERSTRUCTURE.

Thus much finished, we come to the continuation of the Chimney-piece upward; and to form a proper idea of this, recollect that a wind-dial is to occupy the middle space, and that the sides are to be decorated with Doric columns. In all continued Chimney-pieces the upper work is a kind of frame; and here it requires no particular form. The bust will rise a little way into it; but this, far from being a blemish, will be the happiest way imaginable of connecting the two parts together, and will admit an ornament continued from those of the dial.

To begin with regularity, we shall direct our student to draw his first outline of the whole upper work correspondent to the lower; and this done he is to design his columns. Though it is proper columns should be used in the superstructure of a Chimney-piece in this singular case, yet it is to be considered, that when the Doric, the most suited to the general intent is employed, the several methods that tend to lighten it should all be taken. The first of these is the raising it upon a pedestal, because in that case the column having less height in the shaft, requires less diameter; and in appearance nothing will so much contribute to the weight as the thickness of the shaft. This first principle being established, let the student find the axis or center of the upright piece on each side, raised for the support of these columns, and there fix the point for the centre of his column. This ascertained, let him raise the proper pedestal of the Doric order, marking distinctly its base, die, and cap; and let the mouldings which form these be continued as if to unite the two pedestals by an intermediate plain work; they must not be suffered to cut the pediment; and they will be interrupted also by the ornament of the bust. Let them however be marked with a faint line all the way, that it may be rubbed out where these parts intervene. It is the moulding of the base that will be interrupted by the pediment, and that of the cap by the ornaments of bust. The first lines being marked in already, these need not cut through it; but in the other case the place of their stopping cannot be ascertained till the ornament is formed. Upon these pedestals raise the two Doric columns; and, to give them a farther air of lightness, as far as that order is capable, let the shafts be fluted. Upon these raise the proper entablature, and crown it with a broken pediment of the arched kind, from the base of whose opening it will be very proper to throw up a scallop-shell, and to give out on each side festoons of corals, shells, and stat-stones, to fill the vacancy. This done, the space is marked in, and little remains for the architect.

The structure of the work for the dial is not his province. Its outline is all he is concerned to lay in, for he best knows what would be its size,

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and what ornaments should surround it. In the square space contained within the columns, their continued base, and the lower member of their architrave, let him design a proper frame. This must in general conform to the outline of the space; but, to break in upon the sameness of a perfect square figure, let the corners droop, and the top-line from a small distance each way be elevated a little. This must be the shape of the frame; and, as to its composition, nothing is proper but large strong mouldings. Let the dial be now designed, and brought into its proper place. We would not have it fill the centre of the square, for that would be poorly formal. Let it be struck with several concentric circular strokes, which will form the outlines of the mouldings; and let the outer line of these be so near the top, that the ornaments encompassing it may rise to the bottom of the pediment. The outline being thus formed, let the four cardinal points be marked, east, west, north and south, and thus let the ornaments be begun. Opposite to each of these marks let there be a head, representing the antique figures of the winds; and all that is required farther, is to connect by scrolls of a free, open and large work. All is now properly filled, except a square above the bust, left for a particular ornament. Let a couple of dolphins be dropt by the tails from the part of the festoon over this, and let them at some distance surround the bust; within these let the designer form the outline of a large scallop. This will serve as a very elegant as well as proper back ground; and as the upper part will be surrounded by the dolphins, this lower may be decorated on the outside by rising sea-weeds. Thus will be finished a continued Chimney-piece of a nature suited to the particular occasion; in which every part will be appropriated to the main design, and every ornament will correspond with the intended character.

CHISSEL, an instrument used in carpentry, masonry, joinery, sculpture, &c. and distinguished according to the breadth of the blade into half-inch Chisfels, quarter-inch Chisfels, &c. They have also different names according to the different work to which they are applied.

CHOIR, that part of the church where choristers sing divine service; it is separated from the chancel where the communion is celebrated; and also from the nave of the church, where the people are placed; the patron is said to be obliged to repair to the Choir of the church.

CHORD, in geometry, a right-line connecting the extremities of any arch of a circle.

CIMA, called also *cimafium*. A moulding very common in ornaments, and called by workmen *Cima* and *cimafium*, which should be written *cymafium* from the Greek name κυμασιον, which literally signifies a *wave*, and has been transferred to this moulding from its figure. The *cymafium* represents in some measure a wave; it is hollow at the top, and swelling at the bottom, so that its out-line has a waved appearance; it is generally

rally the uppermost member in large cornices. There may be said to be two kinds of *cymaciums*, in one the part that has the greatest projecture, and this they call the ogee reversed, and sometimes the heel. The beauty of this moulding consists in its having the projecture equal to the height.

CILERY, a term in architecture, signifying the drapery or levage that is wrought upon the heads of pillars.

CIMELLARE, in architecture, is a vestry or room, where the plate, vestments, and other rich things belonging to the church are kept.

CINCTURE, or **CEINTURE**, in architecture, is a ring, list, or orlo at the top and bottom of the shaft of a column, separating the shaft at one end from the base, and at the other from the capital. The Cincture is supposed to be in imitation of the girts or ferrils, which were used by the ancients to strengthen and preserve the primitive wooden columns.

CIPPUS, in antiquity, a low column, with an inscription, erected on the high-roads, or other places, to shew the way to travellers, to serve as a boundary to mark the grave of a deceased person, &c.

CIRCLE, in geometry, a plane figure, comprehended under one single line, which returns into itself, having a point in the middle, from which all the lines drawn to its circumference are equal. Every Circle is supposed to be divided into 360 equal parts called degrees. Every Circle is the most capacious of all figures, containing the greatest area under the least bounds. The area of a circle is found by multiplying the periphery by the fourth part of the diameter, or half the periphery by half the diameter. Circles, and their inscribed similar figures, are always as the squares of the diameters, so that they are in a duplicate ratio of their diameters, and consequently of their radii. A Circle is equal to a triangle, whose base is equal to a periphery, and its altitude to the radius. Circles therefore are in a ratio compounded of the peripheries and the radii. The method of finding the circumference of a Circle from its diameter, or radius, being given, is one of the most useful problems in geometry. The most direct and easy way is by the help of fluxions, and infinite series.

CIRCUMFERENCE, in a general sense, the line or lines bounding a plane figure. However, it is generally used in a more limited sense, for the curve line, which bounds in a circle, and otherwise called a periphery; the boundary of a right-line figure being expressed by the term perimeter. Any part of the Circumference is called an arch, and a right-line drawn from one extreme of the arch to the other, is called a chord. The Circumference of every circle is supposed to be divided into 360 degrees. The angle at the Circumference of a circle is double that at the center.

CIRCUMVOLUTION, in architecture, the torus of the spiral line of the Ionic volute.

CIRCUS,

CIRCUS, a large building of a round or oval figure, erected by the ancients, to exhibit shews to the people. The Roman Circus was a large, oblong edifice, arched at one end, encompassed with porticoes, and furnished with two rows of seats. In the middle was a kind of foot-bank, or eminence, with obelisks, statues, and posts at each end. This served them for the courses of their *bigæ* and *quadrigæ*. Those that have measured the Circus say, that it was 2187 feet long and 960 broad; so that it was the greatest building in Rome; some say it would contain 150,000 people, others 260,000, or 300,000.

CISTERN, is properly used for a subterraneous reservoir of rain water, or a vessel serving as a receptacle for rain or other water, for the necessary uses of a family. If you would make your Cisterns under the house, as a cellar, which is the best way to preserve water for culinary uses, then lay the brick or stone with terras, and it will keep water very well. Or you may make a cement to join your brick or stone with, with a composition made of slack'd sifted lime and linseed oil, tempered together with tow or cotton-wool. The bottom should be covered with sand, to sweeten and preserve it. Or you may lay a bed of good clay, and on that lay the bricks for the floor; then raise the wall round about, leaving a convenient space behind the wall to ram in clay, which may be done as fast as the wall is raised; so that when it is finished, it will be a Cistern of clay walled with brick; and being in a cellar, the brick will keep the clay moist (though it should sometimes be empty of water) that it will never crack. Mr. Worlidge says, he has known his to hold water perfectly in a shady place, though not in a cellar. Thus in a garden or other place may such a Cistern be made, and covered over, the rain-water being conveyed thither by declining channels running to it. Also in or near houses, may the water that falls from them be conducted thereto. Authors speak of a Cistern at Constantinople, the vaults of which are supported by two rows of pillars 212 in each row, each pillar being two feet in diameter. They are planted circularly, and in radii tending to that in the centre.

Some persons are very scrupulous about these waters, which are received in Cisterns; for they pretend that they are not all good, without distinction; that rain which falls in a small quantity during heats, and the great rains which fall presently after great droughts, are reckoned in the number of those that are bad; and thence it is, they say, that the water which is sometimes out of Cisterns has a very disagreeable taste, and very often stinks. As for those rains that fall during the autumn, spring and winter, when the weather is not violent; these, say they, are tolerably good. And in all fine weather, they esteem the small rains that fall in the month of May, which should be carefully saved, to be the best,

best, as being the purest and lightest, and even to putrify the water already in the Cistern.

As to the making Cisterns, let it be observed, that the walls should be good, and built to advantage, for fear the water should be lost, that the inside should be well cemented, especially in the angles, without any necessity of doing the same by the arch or roof through which the water cannot pass. As to the size of the Cistern, that depends upon the fancy of the person. The manner of bringing together rain water, is of channels made of different materials, fixed to the edge of the roofs of houses, which convey the water into a small basin made of lead or tin, in the midst of which there is a hole, through which the water passes into a pipe that is there; and which, before it enters into the Cistern, helps it to fall into a stone trough made on purpose near the Cistern. This trough is placed to receive the rain that falls from the roofs of houses, from whence it runs into the Cistern; but, as it has been observed before, that there is a difference to be made between the rains that fall, and which are received into these conveyances, without distinction, it is necessary you should know how to save those that are good and wholesome, and get rid of the rest; it must be by the means of this trough, which has a hole in the bottom, in a corner, on that side where the most declivity appears. This hole must, at the time you judge it convenient to save the water, be stopped, to the end, that the trough coming to be filled up to a certain place, where there is a grate on the side of the Cistern, it may supply a passage for the inclosed water to fall into the Cistern; and when, on the contrary, they do not value the rain that falls, they only leave open that hole, so that as fast as the water comes into the trough, so fast it runs out.

There are some who do not use any such trough as this, but suffer the rain to fall without any distinction into a subterraneous place built higher than the Cistern, in which they put some river sand, pretending that the water which passes through is purged of all ill qualities it may have; and that consequently the water they take out of these Cisterns to drink, ought to be extremely good.

CLAMP, among brick-makers, a pile of unburnt bricks built up for burning. These Clamps are built much after the method that arches are built in kilns, with a vacuity betwixt each brick's breadth, for the fire to ascend by, but with this difference, that instead of arching, they truss-over, or over-span, as they term it, i. e. they lay the end of one brick about half way over the end of another, and so till both sides meet within half a brick's length, and then a binding brick at the top finishes the arch. The mouth, at which the fire is to be in, is left open about two feet and a half wide, and about three feet in height; and then they begin to truss-over, which they do for three bricks in height; and

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which, with a binding brick at the top will close up the arch. But after they have begun to make the place to receive the fuel, before it is closed at the top, they almost fill it with wood, and upon that, lay sea-coal; then being over-spanned like an arch, they strew sea-coal on all the surfaces, and then lay another course of bricks the other way, placing them at a little distance from one another, and strewing sea-coal upon them; and thus they continue laying one course one way, and another the other, and strowing sea-coal betwixt each course, till they come to eight or ten feet high, according as the Clamp is to be for size; when they have done this, they set the wood on fire, and that fires the coals, which being all burnt out, the whole Clamp of bricks is burnt.

CLAMPS, in naval architecture, thick planks in a ship's side, which support the ends of the beams. Also crooked plates of iron, fore-locked upon the trunnions of the cannon, to keep them steady in their carriages at sea. They are likewise frequently used to fasten the masts or bowsprits of small vessels and boats.

CLAMP-NAILS, are such nails as are used to fasten on Clamps in the building or repairing of ships.

CLAMPING, in joinery, &c. is when a piece of board is fitted with the grain to the end of another piece of board cross the grain, the first board is said to be clamped. Thus the ends of the tables are commonly clamped, to prevent them from warping.

CLARO OBSCURO, or *Clare-Obscure*, in painting, the art of distributing to advantage the lights and shadows of a piece, both with regard to the easing of the eye, and the effect of the whole piece. Thus, when a painter gives his figure a strong relieve, loosens them from the ground, and sets them free from each other, by the management of lights and shadows, he is said to understand the Claro Obscuro, which makes one of the great divisions or branches of painting, the whole of a picture being revolvable into light and shadow.

CLARO OBSCURA, or *Chiaro-Scuro*, is also used to signify a design consisting only of two colours, most usually black and white, but sometimes black and yellow; or it is a design washed only with one colour, the shadows being of a dusky-brown colour, and the lights heightened up with white. The word is also applied to two prints of two colours taken off at twice, whereof there are volumes in the cabinets of the curious in prints.

CLINKERS, those bricks which having naturally much nitre, or saltpetre in them, and lying next the fire in the clamp or kiln, by the violence of the fire, are run and glazed over.

CLOISTER, a habitation surrounded with walls, and inhabited by religious. In a more general sense it is used for a monastery of religious of either sex. In the first sense it is the principal part of a regular monastery,

tery, being a square surrounded with walls, or buildings. It is commonly placed between the church, the chapter-house, and refectory, under the dormitory.

CLOSET, a general name for any very small room, generally without any chimney; it is esteemed one great improvement of our modern architects.

COENOTAPH, an empty tomb or monument, erected in memory of some illustrious defunct, who perished in shipwreck, or was slain in battle; whose body could not be found to be interred or deposited in the same.

COLARIN, the little frieze of the capital of the Tuscan and Doric column, placed between the astragal and the annulets; called also hypotrachelium, and sometimes cincture. It is also used for the orlo or ring on the top of the shaft of the column, next the capital.

COLLAR-BEAM, a beam framed across betwixt two principal rafters.

College, a building set a-part for the society and cohabitation of students.

COLONNADE, a peristyle of a circular figure, or a series of columns disposed in a circle, and insulated within-side. Such is that of the little park at Versailles, which consists of thirty-two Ionic columns, all of solid marble, and without incrustation. A polystyle Colonnade is that whose number of columns is too great to be taken in by the eye at a single view. Such is the Colonnade of the palace at St. Peter at Rome, which consists of two hundred and eighty four columns of the Doric order, each above four feet and a half diameter, all in Tiburtine marble.

COLOSSUS, the proper sense of this term is a statue at least twice as large as life, usually much larger. The most famous was the Colossus of Rhodes, made, in honour of Apollo, by Chares the disciple of Lysippus. It was eighty-six feet high, and its thumb so large, that few people could fathom it. This statue was placed across the mouth of the harbour at Rhodes, and the ships with full sails passed betwixt its legs. It was thrown down by an earthquake 224 years before Christ. There are in the court of the capital at Rome remains of statues of Nero and Commodus of that character. Hence we call a building a Colossus, which is a great deal larger than the common size. The amphitheatres of the antients, and the pyramids in Egypt are of this kind. These are more properly called Colossal buildings than Colossus's, that term being appropriated in a manner to statues, when used distinctly in the word; but it may be equally applied to any thing extraordinarily great, or in the same sense as we would use gigantic.

COLOURS, in painting, are used both as to the drugs themselves and to those tints produced by those drugs variously mixed and applied. The principal Colours used by painters are red and white lead, or ceruse, yellow and red-ocres; several kinds of earth, as umber, orpiment, black-lead, cinnabar, or vermilion, gumbouge, blue and green ashes, indigo
bistre,

bistre, lamp-black, smalt, ultramarine, and carmine. Of these Colours some are ground in oil, others only in fresco, and others in water, and others for miniature. Painters reduce all colours under these two classes of dark and light Colours. Under dark Colours are comprehended black, and all those which are obscure and earthy, as umber, bistre, &c. And under light Colours are comprehended white, and all those which approach nearest to it.

COLUMN, in architecture, a round pillar, to support and adorn a building composed of a base, a shaft, and a capital. As every fulcrum is so much the more perfect as it is firm, or carries the appearance of firmness, hence all Columns ought to have their base broader than themselves. As a cylinder and a quadrangular prism are more easily removed out of their place than a truncated cone, or a pyramid in the same base, and of the same altitude, the figure of columns ought not to be cylindrical, but grow less and less, like a truncated cone. Again, as Columns are more firm if their diameter bears a greater proportion to their height than if it bore a less, the greater ratio is to be chosen where a large weight is to be sustained; and less, where a small weight is to be supported. Further, as the design of a Column is to support a weight, it must never be supposed without an entablature. Columns are different in the different orders of architecture, and may be considered with regard to their matter, construction, form, disposition and use. With respect to the order, we have,

Tuscan Column, that which has seven diameters in height, and is the shortest and most simple of all the Columns. Its diminution is one fourth, that is, the diameter at top is three-fourths of the diameter just above the base.

Doric Column, has eight diameters in height, and its capital and base more enriched with mouldings than the Tuscan. It diminishes one-tenth part of the diameter at the base.

Ionic Column, has nine diameters in height, and differs from the others by the volutes in its capital, and by its base.

Corinthian Column, the richest and most delicate of all, has ten diameters in height, and its capital adorned with two rows of leaves with caulicoles, from whence spring small volutes. It diminishes one-seventh part of the diameter.

Composite Column, has ten diameters in height, and two rows of leaves in its capital, with angular volutes like the Ionic. It diminishes one-eighth part of the diameter of the base. It may be observed, that different authors give different heights and proportions to Columns of the same order; and that frequently the same author takes the liberty of dispensing with his own rules; but the heights and proportions exhibited above are a mean between the extremes of all the rest.

COLUMNS

COLUMNS, *with regard to their Matter, are:*

Fusible Column, which comprehends not only Columns of various metals, and other fusible matter, as glass, &c. but also those of stone, said to be cast, the secret of which some believe to have been known to the ancients.

Hydraulic Column, that whose shafts appear to be of crystal; being formed by a number of little threads of water, falling from holes made in a girt of metal, at equal distances, by means of a pipe mounting through the middle of it. It also denotes a Column from whose top proceeds a jet d'eau, to which the capital serves as a basin, whence the water descends by a little pipe, which turns spirally round the shaft.

Moulded Column, that made by impastation of gravel and flints of divers colours, bound together with a cement.

Water Column, that whose shaft is formed of a large jet d'eau, which spouting out water violently from the base, drives it within the tambour of the capital, which is hollow, and in falling down it resembles a Column of liquid crystal.

COLUMNS, *with regard to their Construction.*

Cabled or redented Column, that having projectures in form of cables, in the naked of the shaft, each cable having an effect opposite to that of a fluting, and accompanied with a little list on each side.

Colossal Column, one of so large a size as not to enter any ordinance of architecture, but designed to be placed solitary in the middle of a square, &c. Such is the Trajan Column.

Corollotic Column, that adorned with foliages, turned spirally round the shaft, or in form of crowns and festoons; they are very proper for decorations of festoons.

Diminished Column, that which has no swelling, but begins to taper from the base, in imitation of trees.

Geminated Column, that whose shaft is formed of three similar and equal sides or ribs of stone, fitted within one another, and fastened at bottom with iron pins, and at top with cramp-irons; it ought to be fluted, that the joints may be less discernible.

Column of Joinery, that made of strong timber-boards joined together; it is hollow, turned in the lathe, and usually fluted; such are the Columns of most altar-pieces.

Column of Masonry, is made of rough stone, well laid and covered with plaister, or of bricks, laid triangularwise, and covered with stucco.

Column of *Tambours or Bands*, that whose shaft is formed of several courses of stone, or blocks of marble, less high than the diameter of the Column.

Column, in *Truncheons or Pieces*, consists of two, three, or four pieces of stone or metal, differing from the tambours, as being higher than the diameter of the Column.

COLUMNS, *with regard to their Forms*, are :

Fluted Columns, called also channelled and striated Columns, those whose shafts are adorned with flutes or channellings, either from top to bottom, or only two thirds of their height.

Gothic Column, a round pillar, either too short for its bulk, or too slender for its height, having sometimes twenty diameters, without either diminution or swelling, consequently differing widely from the proportions of the antique.

Hermetic Column, a kind of pilaster, in a manner of a terme, having the head of a man in lieu of a capital. It is so called because the antients placed on the top of such columns the head of Mercury.

Massive Column, one too short for the order, the capital of which it bears ; it likewise comprehends Tuscan and rustic Columns.

Oval Column, that whose shaft has a flatness, its plane being made oval, to reduce the projecture.

Pastoral Column, that whose shaft is formed in imitation of a trunk of a tree, with bark and knots. It may be used in the gates of parks and gardens, and in the decoration of pastoral scenes.

Serpentine Column, that formed of three serpents twisted together, the heads of which serve as a capital ; it is now called the talisman, or enchanted Column.

Swelled Column, that which has a bulging in proportion to the height of the shaft. This practice obtains among the modern architects, but seems to have been unknown to the ancients.

Twisted Column, that whose shaft is twisted round in form of a screw, with six circumvolutions, being usually of the Corinthian order. Sometimes the twisted Column is in form of two or three slender shafts twisted round, so as to leave a cavity in the middle.

COLUMNS, *with regard to their Disposition*.

Angular Column is an insulated one, placed in the corner of a portico, or inserted in the corner of a building, or even a Column that flanks any angle of a polygon.

Attic Column, an insulated pilaster, having four equal faces, and of the highest proportion.

Cantoned

Cantoned Columns, those Columns engraved in the four corners of a square pillar, to support four springs of an arch.

Coupled Columns, those disposed two and two, so as almost to touch each other at their bases and capitals.

Doubled Columns, one Column joined with another in such a manner that the two shafts penetrate each other with a third of their diameter.

Engaged Column, that which enters in a wall with one-third or one-fourth of its diameter.

Grouped Columns, those placed on the same pedestal or socle, either by three and three, or four and four.

Insulated Column, one standing free and detached from every other body.

Midian Columns, a name given by Vitruvius to the two Columns in the middle of a porch, which have their intercolumniation larger than the rest. The term may also be applied to the middle row of Columns in a frontispiece adorned with three orders.

Niched Column, that whose shaft enters with half its diameter into a wall, hollowed out for its reception with its plane parallel to the projection of the tore.

Columns, with regard to their use, are either, first, astronomical Columns, such as that at Paris, erected for astronomical observations. 2. Chronological Column. 3. Funeral Column, which generally bears an urn, and has its shaft overspread with symbols of grief and immortality. 4. Gnomonic Column, a cylinder, upon which the hour of the day is represented by the shadow of a style; of these there are two kinds; in the one the style is fixed, and the hour lines are no more than the projection of a vertical dial upon a cylindrical surface; in the other the style is moveable, and the hour-lines are drawn to the different heights of the sun in the different seasons of the year. 5. Historical Column, that whose shaft is adorned with a basso relievo, running in a spiral line its whole height, and containing the history of some great personage. 6. Hollow Column, that which has a spiral stair-case within side, for the conveniency of ascending to the top. 7. Indicative Column, that which serves to shew the tides along the sea coasts. 8. Instructive Column, such as that raised by the son of Pisistratus at Athens, containing the rules of Agriculture. 9. Itinerary Column, one with several faces placed in the crossing of several roads, serving to shew the different routes by the inscriptions engraved on its several faces. 10. Lactary Column, at Rome, according to Festus, in the herb-market, in the pedestal of which was a cavity, where young children, abandoned by their parents, thro' poverty or inhumanity, were exposed to be educated at the expence of the public. 11. Legal Column, among the Lacedemonians, that erected in a public place, upon which were engraven the fundamental laws of the state. 12. Limitrophous or boundary Column, that which shews the limits

limits of a kingdom, or country conquered. Those called the Columns, or pillars of Hercules, are two very steep mountains, in the streights of Gibraltar. 13. Luminous Column, one formed in a cylindrical frame, mounted and covered over with oiled paper or gauze, so that lights being disposed in ranks within over each other, the whole appears to be on fire. 14. Manubiary Column, a Column adorned with trophies, built in imitation of trees, wherein the spoils of enemies were anciently hung. 15. Memorial Column, that raised on occasion of any remarkable event, as the monument in London, built to perpetuate the memory of the burning of that city in 1666. 16. Menian Column, any Column that supports a balcony, or meniana. 17. Military Column, a Column of marble, raised, by order of Augustus, in the middle of the Roman forum, from whence, as a center, the distances of the several cities of the empire were reckoned by other military Columns, disposed at equal distances on all the grand roads. 18. Rostral Column, that adorned with the beaks, or prows of ships, &c. erected either in memory of a naval victory, or in honour of some admiral, &c. 19. Statuary Column, that which supports a statue. 20. Symbolical Column, that representing by symbols some particular country, or some memorable action. 21. Triumphal Column, that erected by the ancients in honour of an hero; the joints of the stones or courses of which were covered with as many crowns as he had made military expeditions. 22. Zoophoric Column, a kind of statuary Column, bearing the figure of some animal.

COMMISSURE, in architecture, is the joint of two stones, or the application of the one to that of the other.

COMPARTITION, in architecture, the useful and the graceful disposition of the whole ground-plot of an edifice, into rooms of office, of reception or entertainment.

COMPARTMENT, or COMPARTIMENT, in general, a design composed of several different figures, disposed with symmetry, to adorn a paterre, a cieling, a platform, panes of glass, or pannels of joinery, &c. A Compartment of tiles, or bricks, is an arrangement of them, of different colours, and varnished for the decoration of a building. Compartments, in gardening, are an assemblage of beds, plats, borders, walks, &c. disposed in the most advantageous manner that the ground will admit of.

COMPASSES, or *pair* of COMPASSES, a mathematical instrument for describing circles, measuring figures, &c. The principal perfection of this, as of all other Compasses, consists in the easy and uniform opening and shutting of their legs, one of which may be taken out in order to make room for others. There are now used Compasses of various kinds and contrivances, accommodated to the various uses they are intended for.

COMPOSED

COMPOSED ORDER, this term occurs in some writers, and is imagined by the generality of readers to mean the same thing with the Composite. The sense of the word is in reality the same, but custom has made them express what is different. The Composite Order is, as we shall shew, one thing, a Composed Order is capable of great and endless variety; it comprehends any composition made at the pleasure of the architect, whose ornaments are extraordinary and unusual, but have somewhat of beauty. We see a great deal of this workmanship in buildings, but it were well if there were somewhat less of it; for it is often very faulty.

COMPOSITE ORDER, in architecture, is the last of the five orders of columns. It has this name from its being compounded of two or more of the others: The Latin word *compositus*, from which it is derived, signifying compounded, or made up of others. The Corinthian is indeed by Vitruvius said to be composed of the Doric and Ionic, but the traces in that are not so plain as those of the Corinthian and Ionic are in this Composite.

The Composite, like all the other orders, consists of a base, shaft, capital, and entablature. The Corinthian base is used for Composite order often, and sometimes the attic. Vignola gives the Composite a distinct base, which differs from the Corinthian, in that it has only one astragal between the two scotias, the other being between the great torus, and first scotia; but this is not much used. The shaft is the same with that of the Corinthian, only that it is half a diameter higher. The capital has been described already under the article capital, as composed of the Ionic upon the Corinthian. In the entablature the architrave has two faces, with an ogee between, the freeze has nothing particular, and the cornice has simple modillions and consists of fourteen members, and the corona and modillions are massy. Often the Corinthian entablature unaltered is put upon the Composite column; we have an ancient instance of this in the arch of Titus, but it has also, as we see, an entablature of its own. The height of the Composite Column is a subject on which architects differ; some making it the same with the Corinthian, others somewhat more, others less, and placing it under the Corinthian as more massy, allowing that to be the most delicate of all; and indeed this is very reasonable, for the Corinthian capital has an aspect of more lightness than the Composite.

COMPOSITION, in painting, consists of two parts, invention and disposition; the first is the choice of the objects which are to enter into Composition of the subject the painter intends to execute, and is either firmly historical or allgorical. The other very much contributes to the perfection and value of a piece of painting.

CONCAVE MEMBER, a name by which some call the Scotia, a hollow moulding between the torus at the base of columns.

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CONCLAVE,

CONCLAVE, in architecture, is a closet, or inner chamber ; this name is also given to a range of small cells, about ten feet square, made of wainscot. They stand in a line along the galleries and hall of the vatican at Rome, and is the place where the cardinals of the Romish church meet, and are shut up in order to elect a pope.

CONE, is a solid body, having a circle for its base, and terminated in a point or vertex. If the axis be perpendicular to the base, it is said to be a right cone ; and if inclined or oblique, a scalenous cone. Scalenous cones are again divided into obtuse-angled, and acute-angled.

CONGE, in architecture, a mould in form of a quarter round, or a cavetto, which serves to separate two members from one another, such as that which joins the column to the cincture, called also apophyge ; there are two sorts of cones, the one swelling, the other hollow, the swelling Conge is what we more commonly call the quarter round, the hollow is the cavetto.

Conges are iron rings used in the extremities of wooden pillars, to keep them from splitting, and are sometimes imitated in stone-work.

CONIC-SECTIONS, curves formed from the section of a cone by a plane. The curves generally called Conic-sections are three, viz. the ellipsis, parabola, and hyperbola ; for though the triangle and circle are formed from the section of a cone, they are not usually considered in that capacity. All diameters in a circle and ellipsis intersect one another in the center of the figure within the section. In the parabola they are all parallel amongst themselves and to the axis ; but in the hyperbola they intersect one another, but this without the section, in the common center of the opposite sections.

CONSOLE, in architecture, an ornament cut upon the key of an arch, which has a projecture, and, on occasion, serves to support little cornices, figures, busts, and vases. They are also called mutules and modillions, according to their form. Some of them are striated, others in form of cartouches, others have drops in form of triglyphs.

CONTENT, the capacity or area of a space, or the quality of any matter or space included in certain bounds. The Content of a ton of round timber is forty-three solid feet. A load of hewn timber contains fifty cubic feet. In a foot of timber are contained seventeen hundred and twenty-eight cubic or square inches ; and as often as seventeen hundred and twenty-eight inches are contained in a piece of timber, be it round or square, so many foot of timber are contained in that piece.

CONTOUR, in painting, the out-line, or that which defines a figure. Contour with the Italian painters signifies the lineaments of the face. In architecture, it is the out-line of any member, as that of a base, a cornice, or the like.

CONTRA-

CONTRAMURE, in architecture, an out-wall built about the wall of a city.

CONTRAST, in architecture, is to avoid the repetition of the same thing, in order to please by variety, as is done in the great gallery in the Louvre, at Paris, where the pediments are alternately arched and angular. In painting and sculpture, an opposition, or difference of position, attitude, &c. as where in a groupe of three figures, one is shewn before, another behind, and another sideways, they are said to be in contrast. The Contrast is to be observed in the position of several figures, and in that of the several members of the same figure: thus, if the right arm advance farthest, the right leg is to be hindermost; if the eye be directed one way, the arm to go the contrary way, &c. the Contrast must be pursued even in the drapery.

COPING, or **COPPING** of a wall, in architecture, the top or covert of a wall, made sloping to carry off the wet. In carpentry, a sort of hanging over, not square to its upright, but levelling on its under side, till it ends in an edge.

CORBEL, a carved ornament, representing a basket full of fruit and flowers, used to finish some elegant part of a building, as to place on a column, or on the heads of the caryatides. This word is also used to express the bell or vase of the Corinthian capital, from its being supposed to have originally been designed from a basket covered with a tile, and surrounded by leaves of the acanthus. In building, a short piece of timber, placed in a wall with its end sticking out six or eight inches, as occasion may require, in the manner of a shoulder-piece. The under part of the end thus projecting out, is sometimes cut in the form of a bouldin, sometimes of an ogee, and sometimes of a face, &c. according to the designer's fancy, the upper side being plain and flat. These Corbels are usually placed for strength, immediately under the semi-girders of a platform, and sometimes under the ends of camber-beams; in which latter case, they are usually placed a foot or two below the beam, and have a piece of timber standing upright close to the wall from the Corbel to the beam. Corbel is also used by some architects for the niches or hollows left in the walls for images, figures or statues to stand in.

CORINTHIAN ORDER, is the fourth order of architecture, according to Scammozzi; but M. Le Clerc makes it the fifth, being the most noble, rich, and delicate of all the other five. The Corinthian Order has several characters by which it is distinguished from the rest. Its capital is adorned with two rows of leaves, between which arise little stalks, or caulicoles, of which the volutes are formed, which support the abacus, and are sixteen in number. It has no ovolo, nor even abacus, properly speaking, for the number that goes by that name, is quite different from
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the abacus of the other orders, being cut with a sweep, in the middle of which is carved a rose, or other ornament.

Most modern architects pass by Vitruvius's Corinthian Order, and follow that of the ancient buildings; and select from them according to their several tastes; so that the modern Corinthian is a kind of Composite, differing from many of the ancient buildings, and much more from Vitruvius. Vignola and M. Le Clerc made the Corinthian Order twenty modules in height, yet Serlio makes it but eighteen; and M. Perrault makes the height of the shaft less than that of the Ionic, by reason of the excess of its capital.

The Composite has been intended as an improvement upon it in point of elegance, but the capital in that order is heavier than in the Corinthian, and therefore those seem to act very reasonably who give its column a less height than the Corinthian, leaving that, as we have named it, the lightest of all the orders. The Corinthian is one of the three ancient orders of the Greeks, and is the highest pitch to which they carried architecture in point of elegance. They began with the Doric, they rose to the Ionic, and lastly, they added the Corinthian, whose capital was formed, as has been before observed, upon the idea of a plant of acanthus growing about a basket, and as this appeared very light and elegant, they gave a height and lightness to the column.

The base of the Corinthian column consists of a torus set upon a plinth, a scotia, two astragals, another scotia, and then an upper torus. The column has nine diameters and an half in height, the capital is composed of leaves and stalks of the acanthus, which last, turning in spires under the abacus, makes a small number of volutes. The architrave consists of three faces, the freeze is usually decorated with sculptures, and the cornice has modillions, and is in most places beautifully adorned with carving. The Corinthian is the order to which recourse is usually had for giving the utmost elegance to a building. It is remarkable that the ruins of Palmyra are all Corinthian, except two Ionic half columns.

The CORINTHIAN COLUMN, by equal Parts.

Corinthian pedestal, being in height three diameters, and is divided into four, allowing one to the base, whose plinth is two thirds of it; the other part is divided into nine, allowing two and a half to the torus, a half part to the fillet, three to the cymase, a half part to the fillet, and two and an half to the ogee; and the breadth of the die is a diameter, and two-thirds. The projection of its base is equal to its height, the upper fillet has three of these parts, and the lower fillet seven. The height of the cornice is half the base, being one-eighth of the whole height, and is divided into eleven, by allowing one and a half to the ogee, a half part to the fillet, three to the cymase, three to the corona,
two

two to the ogee, and one to the fillet. The projection of the fillet has two of these parts, the cymase four and a half, the corona six and a half, and the whole eight and a half.

The height of the base of the column is half a diameter, which is divided into six, allowing three-fourths to the plinth, one to the lower torus, one-fourth to the fillet, a half part to the scotia, one to the astragals and fillets (which are to be parted into six, allowing one to each fillet, and two to each astragal) a half part to the scotia, one-fourth to the fillet, and the other three-fourths to the torus; the fillet above the said torus is equal to the others, and part of the column. The projection is one fifth part of the diameter; and the upper fillet has one of the said six parts; the upper torus, and the lesser fillets have one and a half, and one three-fourths are allowed to the astragals, and lower fillet. Diminishing of this column is one-eighth of the diameter.

The *Corinthian* capital. Divide the diameter into six parts, and take seven such parts for the height, allowing two to each height of the leaves (whose heads turn down half a part of it) allow another part of the stalks whose heads turn down one-third of it; three fourths to the small volutes, and one-fourth to the fillet; the large volute is as high as the said fillet; a half part to the hollow, and a half part to the ovolo, whose fillet has one-third of it. For the projection of the capital, make a square, each side being a diameter and a half, then draw the diagonals, and towards each angle, mark a diameter from the center, and draw the cants at right angles with the said diagonals; then, for the curvature of the abacus, make an equilateral triangle, (the part of the square cut off by the cants being the base,) and the opposite angle the centre. In the circumference of the column are eight leaves, each leaf having four plants, and each plant five raffles. The projection of their heads is found by a straight line from the abacus to the collarino. The rose is as high as the volute, and projects to the side of the before-mentioned square.

The architrave is divided into nine parts, allowing one and a half to the first face, one and one-fourth to the small bead, two to the second face, three-fourths to the small ogee, and a half part to the fillet. The projection of the second face has one-fourth of a part; the third face, one of those parts, and the whole, two. The height of the entablature is two diameters, and is divided into six parts, two of which go to the architrave, one and a half to the frieze, and two and a half to the cornice.

The cornice is divided into twelve parts, allowing one and one-fourth to the ogee, one-fourth to the fillet, one-fourth to the dentils, one-fourth to the fillet, one-fourth to the ovolo, one-fourth to the fillet, two to the modillions, a half part to the ogee, and one-fourth to the fillet; one and three-fourths to the corona, three-fourths to the cima-reversa, one fourth to the fillet, one and a half to the cima recta, and a half part to the fil-

let. As for the projections of the cornice; the ogee is one half of these parts, and the dentils two and a half. The dentils are in breadth two-thirds of their height, and the spaces two-thirds of their breadth. The modillions project three and three-fourths; and its breadth is one-fifth of the diameter, and one being in the center, gives the spaces. The returned modillions eight and a half, the cap nine, the corona nine and a half, the cima reversa ten and a half, and the whole twelve, being equal to the height.

CORK-TREE, is like the holm-tree, resembling the same in its leaves, catkins, and fruit, the bark of it is light, spongy, and of a grey colour, inclining to yellow. There are indeed several sorts of this tree, but two more remarkable, viz. one of a narrower, less jagged leaf, and perennial; the other of a broader leaf, and falling in the winter. It grows in the coldest part of Biscay, in the north of England, in Italy, Provence, and south-west parts of France, especially the second species, which are fittest for our climate. It grows in all sorts of ground, dry heath, stony and rocky mountains, so that its roots run above the earth, where they have little to cover them; and therefore we have no reason to despair of their growing with us. There were none of them in France in Pliny's time; but there are large woods of them in Italy, from whence it is probable they were transplanted hither.

The manner of decorating, or taking off the bark of the Cork-tree, is as follows: they once in two or three years strip it in a dry season, otherwise the intercutaneous branches endanger the tree, and therefore a rainy season is very pernicious to them when the bark is off; they unwrap it before the fire, and press it even, and that with weights, on the convex part, and it continues, being cold. The best bark should be light, even, of a middling thickness, without cracks, having a few knobs, and easy to be cut. There are cups made of one sort of Cork, good for hectic persons to drink out of. The Egyptians made coffins of Cork, which being lined with a resinous composition, preserved their dead uncorrupted. They sometimes in Spain line their stone walls with it, which renders them very warm, and corrects the moisture of the air. Beneath the Cork or bark of this tree, there are two other coats; one of them reddish, which they strip from the bole when filled, and is valued by turners; the rest of the wood is not only good firing, but also applicable to many other uses in building.

CORNER-STONES, are two stones commonly of Rigate or fire-stone; of which there stands one in each jaumb of a chimney. Their faces are hollow in breadth, being a certain sweep of a circle. The breadth of each stone is equal to the breadth of the jaumb, and their height reaches from the hearth to the mantle-tree.

CORNICE,

CORNICE, the word is derived from the Latin *corona*, a crown. It is the uppermost member of the entablature of a column, or that which crowns the order. The Cornice is the third grand division of the trabeation commencing with the frieze, and ending with the cymatium. The Cornice is different in the different orders, there being as many kinds of Cornices, as there are different orders of columns. It is most plain in the Tuscan order. Vignola makes it to consist of an avum, or quarter-round, an astragal or baguette, the reglet or fillet, the larmier, and the talon.

In the Ionic, the members are in most respects the same as in the Doric, except that they are frequently enriched with carving, and have always dentils. In the Doric, Vignola makes the capitals of the triglyphs of the frieze, with their bandelettes, a talon, mutules, or dentils, a larmier with its gutta, underneath, a talon, fillet, cavetto and reglet.

The Corinthian Cornice is the richest, and is distinguished by having both modillions and dentils, contrary to the opinion of Vitruvius, who looks upon these two ornaments as incompatible; and of M. Le Clerc, who accounts the dentils as peculiar to the Ionic. In the composite, there are dentils, its mouldings carved, and there are channels under the soffit. The Tuscan, according to Vitruvius, the whole height of this Cornice is one module and a half, which height being divided into four grand divisions, the uppermost of which goes to the bouldin and fillet under it; and this division being subdivided into four parts, three of them go into the bouldin, and one to the fillet.

The two next grand divisions go to the corona or crown, (which is flat and plain,) and the lowermost grand division goes to the cymatium, which being again divided into three parts, the uppermost of them goes to the fillet, and the other two to the cyma or ogee. The projecture of the whole Cornice, as also of each member thereof, he makes to be equal to its height; and the under side of the corona he divides into eleven parts, of which he allots two to the fillet, and one to the denticle, and so alternately; for, says he, it is fitting to have three as deep as they are large.

Scamozzi makes the whole height of this Cornice thirty-nine minutes, and the height of each particular member of it (beginning at the top, and descending orderly) is as follows: the upper list or plinth of the Cornice three M. the supercilium, list, tinca, or eye-brow, one M. and a half; the upper cyma or ogee eight M. the list under it one minute and a half; the corona or crown nine M. and three-quarters; the list one M. and a half; the cyma or greater ogee, six M. (here is one and a half M. left betwixt for the depth of the dentils; the supercilium or list one and a half M. the cymatium or little ogee five M. the list two M. Palladio makes the whole height of this Cornice forty-four M. of which the list at the top is three and a half M. the scina recta ten M. the list under it

two and a half M. the corona ten M. the bouldin nine, the list one and a half, and the cavetto or hollow seven and a half M.

The Doric Cornice is made by Vitruvius after two different fashions; the whole height of the one is half a module, which being divided into two grand divisions, one of them, (viz. the upper one) is subdivided into eight parts, of which one part goes to the list at top, and the other seven to the ogee. The other grand division is again divided into four parts, the uppermost and lowermost of which parts go to the two cymatiums, and the two middle parts go to the corona. The list of each of these cymatiums, is one-third of the whole cymatium. The whole height of the other fashioned Cornice is forty M. which being divided into nine parts, two are to go to the two pascias, one to the thorax or bouldin above them, two to the modillions above that, two to the crown, and two to the cima, or ogee at the top. The modillions, as also the crown, being divided each into three parts, one of them shall go to their respective cymatiums, of which their lists are each one-third of the whole. Scamozzi makes the whole height of this Cornice forty-two M. of which the list at the top is two M. the great ogee seven M. the list one M. the little ogee three M. the corona eight M. the list one M. the casement two M. the bouldin five M. the list one M. the square-seven M. the list one M. and the bouldin four M. Palladio in his verbal description of this Cornice, makes the whole height of it to be thirty-five M. But in his figure it is but thirty-three M. and a quarter, of which the list at top is two M. and a quarter, the cima recta, or ogee six M three-fourths; the list one M. the cima reversa three M. one-fourth; the corona eight M. the ovolo or bouldin six M. the list one M. and the casement at the bottom five M.

The Ionic; Vitruvius makes the whole height of this Cornice about fifty-two M. and a half. He describes two Cornices of different fashions in this order; in one of which he divides the whole height into eleven parts; the two uppermost of which go to the cymatium, and the bouldin under it; and this space is again subdivided into six parts, two of which go to the fillet of the cymatium, three to the ogee, and one to the bouldin. The next two grand divisions go to the corona; and the next three to the cartouses, and the cymatium over them; and this space being subdivided into five parts, one of them makes the cymatium, of which the fillet is one-third of the whole; then one and a half of the next grand division goes to the bouldin and fillet over it, of which the fillet is one seventh part of the whole. And again, one and a half of the next grand division goes to the casement and fillet over it, of which the fillet is one-fourth of the whole. And the last grand division goes to the cymatium, of which the fillet is one third part of the whole.

In the Cornice of the other fashion, he divides the whole height into six parts; the uppermost of which he allows to the ogee, the fillet of
which

which is one-sixth part; the next grand division being subdivided into three parts, the uppermost of them goes to the cymatium, (the fillet of which is one-third part) and the other two to the corona. The next two grand divisions are subdivided into five parts, the uppermost of which goes to the cymatium (the fillet of which is one-third part) and the other four to the cartoufes. The next grand division is subdivided into four parts; three of which go to the bouldin, and one to the fillet under it; and the last grand divisions being subdivided into four parts, three of them are for the casement, and one for the cymatium, of which its fillet is one-third part.

According to Scamozzi, the whole height of this Cornice is forty-two M. whereof the list at the top is two M. the *cima recta* five and a half M. the list one M. the *cima reversa* two and a half M. the cartoufes seven M. the bouldin four M. the list one M. the square five M. the list one M. and the bouldin four M. Palladio makes the whole height of this Cornice forty-six and a half M. of which the list at the top is two and a half M. the *cima recta* seven M. the list one and one-fourth M. the *cima reversa* three and a half M. the corona eight M. the *cima recta* over the modillions three and one-fourth M. the modillions seven and a half M. the list one M. the ovolo or bouldin six M. the list one and one half, and the cavetto or hollow five M.

The whole height of the Corinthian Cornice, according to Vitruvius, is about one module; and he describes two forms of Cornices in this order; in one of which, he divides the whole height into five parts; the uppermost of which goes to the ogee, of which its fillet is one-sixth part. Then one and one-fourth goes to the corona and cymatium over it, of which space the cymatium is one-third part, and its fillet one-third of that. Then one and three-fourths of the next grand divisions go to the modillions and cymatium over them, of which space, the cymatium is one-seventh part. And the last grand division goes to the bouldin and fillets over and under it; and this being divided into three parts, the lowermost goes to the fillet; and the other being subdivided into six part, five of them go to the bouldin, and the other to the fillet over it. In the Cornice of the other fashion, the whole height is divided into nine parts; of which the two uppermost being divided into four parts, three of them go to the ogee (whose fillet is one-sixth of the whole) and the next two grand divisions go to the corona. The next two grand divisions go to the modillions, and the cymatium over them; one-fourth of the space goes to the cymatium (whose fillet is one-third of the whole cymatium) and the rest of the modillions. The next two grand divisions go to the bouldin and fillet over and under it, which fillets are each one-seventh of the whole. And, the last grand division goes to the *cima* at the foot of the Cornice.

Scamozzi makes the whole height of this Cornice forty-six and three-fourths M. of which the lift of the cima recta is two M. the cima recta six and a half M. the lift of the cima reversa one M. the cima reversa three and one-fourth M. the half round one and one-half M. the corona seven and one-half M. the cymatium three and one-half M. the modillions eight and a half M. the lift one M. the bouldin five M. the lift one M. and the cima five M. According to Palladio the whole height of this Cornice is fifty M. of which two and one third M. go to the lift of the cima recta; the cima recta is eight and one-third M. the lift two-thirds M. the cima reversa three M. the corona seven one-third M. the lift of the ogee over the modillions two-thirds M. the ogee two and two-thirds M. the modillions eight and a half M. the bouldin four and one third M. the lift one M. the bouldin five and a half, the lift one M. and ogee four and a half M.

The Composite Cornice. Vitruvius makes the whole height of it equal to the diameter of the column above, which is about fifty-two and a half M. He also describes two Cornices of this order of a different fashion; one of which he divides into two parts, the uppermost of which goes to the ogee (whose fillet is one-seventh of the whole) and the undermost to the corona and cymatium over it; and this space being divided into four parts, three of them go to the corona, and one to the cymatium, whose fillet is one-third of the whole cymatium.

Scamozzi makes the whole height of this Cornice forty-eight M. and Palladio forty-five M. but about the height of each particular member, they leave us very much in the dark. Goldman makes the height of the Tuscan Cornice one and one-third, and its projecture two-fifths M. the height of the Doric one and one-third, and its projecture two and two-fifths. The height of the Ionic one and three-fifths; its projecture two and two-fifths. The height of the Composite one and three-fifths; its projectures two and thirteen thirties. The height of the Corinthian one and two-fifths, its projectures two and thirteen thirties.

The Projecture of the CORNICE.

It is an established rule in architecture, that the Cornice of the entablament have its projecture nearly equal to its height; and yet the projecture may be safely made a little larger on occasion, particularly where a beautiful profile is required.

The Cornice is different in different orders, there being as many kinds of Cornices as there are different orders of columns. It is most plain in the Tuscan order. Vignola makes it consist of an ovum or quarter-round, an astragal or baguette, the reglet, or fillet, the larmier, and the talon. In the Ionic, the members are in most respects the same as in the Doric, except that they are frequently enriched with carvings, and have always dentils. In the Doric, Vignola makes the capitals of the triglyphs

glyphs of the frieze, with their bandeletters, a talon, mutules, or dentils, a larmier with its guttæ underneath, a talon, fillet, cavetto, and reglet. The Corinthian Cornice is the richest, and is distinguished by having both modillions and dentils. In the Composite there are dentils, its mouldings carved, and there are channels under the soffit.

Cornice is also used, in general, for all little projectures in masonry or joinery, even where there are no columns, as the Cornice of a chimney, beaufet, &c.

Architrave Cornice, is one that is immediately contiguous to the architrave, the frieze being retrenched.

Mutilated Cornice, is one whose projecture is cut or interrupted to the right of the larmier, or reduced to a platband with a cymase.

Cantaliver Cornice, a term used by workmen for a Cornice that has cantalivers underneath.

Coving Cornice, that which has a great casement or hollow in it, usually lathed and plaistered upon compass-sprethets, or brackets.

Modillion Cornice, one with modillions under it.

CORONA or CORONIS, these terms are sometimes used to signify a Cornice, but wrongly; they express any crowning or finishing of a work, at the top of whatever kind that be, as a pediment, or the like; but as the Cornice has a peculiar name, something like these words, and derived from them, it should always be used in that sense. Corona is also used to express particularly that flat square and massy member of a Cornice, so called, because it crowns not only the Cornice, but the entablature, and the whole order. The French call it the larmier, our workmen the drip, as serving, by its great projecture, to screen the rest of the building from the rain. Some call it absolutely the Cornice, as being the principal member thereof; Vitruvius frequently uses the word Corona for the whole Cornice. The Corona is itself crowned or finished with a riglet or fillet. The Corona, says M. Le Clerc, is that large square moulding immediately under the cymase. It projects very much, both for the greater beauty of the entablature, and for the better sheltering even of the whole order. He also says, he makes this part stronger than the cymase, as being the ruling member of the entablature, and even of the order. Underneath this he usually digs a channel, for three reasons; the first is to give it more grace and ornament, the second is to render it less heavy, and the third is to prevent rain, or other moisture, from trickling down along the order. For the water falling from the top of the Cornice, not being able to ascend into the channel, is forced to fall drop by drop from the building, by the means of a little ledge; and it is on this account, that the bottom of the Corona is called larmier, or drip.

CORNUCOPIA, or horn of plenty, among architects, painters, &c. is represented under the figure of a large horn, out of which issue fruits, flowers,

flowers, &c. Upon medals the Cornucopia is given to all deities, genii and heroes, to mark the fecundity and abundance of all the wealth procured by the goodness of the former, or the care and valour of the latter.

CORRIDOR, in architecture, a gallery, or long isle around a building, leading to several chambers, at a distance from each other.

CORSA, a name by which Vitruvius calls a platband, a square fascia with more height than projecture.

CORPS, in architecture, a term to signify any part that projects or advances beyond the nakedness of a wall, serving as a ground for some decoration, or the like.

COUCH, in painting, a phrase used for each lay or impression of colour, either in oil or water, wherewith the painter covers his canvas, wainscot, or other matter to be painted. This word is also used for a lay or impression on any thing, to make it more firm and consistent, or to screen it from the weather. Thus paintings are covered with a Couch of varnish; a canvas to be painted must have two Couches of size, before the colours are laid on; two or three Couches of white lead are laid on wood, before the gold is applied. The leather-gilders lay a Couch of water and whites of eggs on the leather, before they apply the gold and silver-leaf.

COVING, in building, when houses are built projecting over the ground-plot, and the turned projecture arched with timber, turned with a quadrant of a circle or semi-arch, lathed and plaistered, under which people may walk dry, as is much used at Tunbridge-Wells, on the upper walks, the work is commonly called Coving.

COUNTER-DRAWING, in painting, is the copying a design, or painting, by means of a fair linen cloth, an oiled paper, or other transparent matter, where the strokes appearing through are followed with a pencil, with or without colour. Sometimes it is done on glass, and with frames or nets divided into squares with silk or thread, and also by means of instruments invented for the purpose.

COUNTER-FORTS, buttresses, spurs, or pillars of masonry, serving to prop or sustain walls, or terrasses, subject to bulge or be thrown down. These works are usually bent into arches, and placed at a distance from each other. When any thing is built on the descent of a mountain, it must be strengthened with *Counterforts*, well bound to the wall, and at the distance of about twelve yards from each other.

COUNTER-GAGE, in carpentry, a method used in measuring the joints by transferring the breadth of a mortoise to the place in the timber where the tenon is to be, in order to make them fit each other.

COUNTER-LIGHT, in painting, a window or light opposite to any thing which makes it appear to a disadvantage.

COUN-

COUNTER-MURE, a little well built close to another, to fortify and secure it, that it may not receive any damages from buildings made contiguous to it.

COURSE, in architecture, a continued range of stones, level, or of the same height throughout the whole length of the building, without being interrupted with any aperture. A course of plinths, is the continuity of a plinth of stone or plaster, in the face of a building, to mark the separation of the stones.

COUSSINET, in architecture, signifies the stone which crowns a piedroit or peer, or that lies immediately over the capital of the impost, and under the sweep. The bed of it is level below, and curved above, receiving the first rise or spring of the arch or vault. It is also used for the ornament in the Ionic capital, between the abacus and the echinus or quarter-round, and which serves to form the volutes. It is first named from its representing a cushion or pillow, pressed by the weight over it, and bound with the strap or girdle, called, by Vitruvius, baltheus.

CRAMP-IRON, or **CRAMPS**, a piece of iron bent at each end, serving to fasten together pieces of wood, stones, or other things.

CRANE, a machine used in building and commerce, for raising large stones and other weights. It is of two kinds, in the first, only the gibbet moves upon its axis; and in the second, called the rats-tail crane, the whole crane, with its load, turns upon its axis.

CRANK, a contrivance in machines, in the manner of an elbow, only of a square form, projecting from a spindle, and serving by its rotation to raise and fall the pistons of engines. It is also the iron support for a lantern, or the like; also the iron made fast to a stock of a bell for ringing it.

CRAYON, or **PASTIL**, among painters, a composition of colours, reduced to the texture of chalk, and used dry, in the form and manner of pencils, for painting on paper.

CREST, among carvers, an imagery, or carved work, to adorn the head, or top of any thing, like our modern corniche.

CROSSETTE, in architecture, the returns in the corners of chambranes, or door cases, or window-frames, called also ears, elbows, ancones, prothyrides. The Crosette of a luthern is the plaster or covering near a luthern.

CROSS-GRAINED, Timber is said to be Cross-grained, where a bow or some branch shoots on a part of the trunk of the tree; for the bough or branch shooting forwards, the grain of that branch shoots forwards also, and so runs across the grain of the trunk, and if it be well grown together, it will scarce be perceived in some stuffs, but only in working.

CROWN POST, in architecture, a post which in some buildings stands upright in the middle, between two principal rafters.

CROWN, in architecture, the uppermost member of the cornice, called also corona, and larmier.

CROWNING, in architecture, any thing that finishes a decoration. Thus a corniche, a pediment, a croteria, are called Crownings.

CRYPTA, a subterraneous place or vault, especially under a church, for the interment of particular families or persons. Vitruvius uses the word for part of a building, answering nearly to our cellar. Hence, *Crypto Portico*, a subterraneous place, arched or vaulted, used as an underwork or passage into old walls. The same words are also used for the decoration at the entry of a grotto.

CUBATURE, is the cubing of a solid, or the measuring of the space comprehended in a solid, as in a cone, pyramid, cylinder, &c. The Cubature has respect to the content of a solid as the quadrature has to the superficies of a figure; so that the Cubature of the sphere turns on the same thing as the quadrature of the circle.

CUBE, in geometry, a regular or solid body, consisting of six square and equal faces and sides, and its angles all right, and therefore equal. The Cube is supposed to be generated by the motion of a square plane along a line equal to one of its sides, and at right angles thereto; whence it follows, that the planes of all sections parallel to the base, are square equal thereto, and consequently to one another.

CUPOLA, in architecture, a spherical vault, or the round top of the dome of a church, in the form of a cup inverted.

CURVE, in geometry, a line, wherein the several points it consists of, tend several ways, or are posited towards different quarters. In this sense the word is used in opposition to a straight line, whose several points are pointed towards the same quarter.

CUTTING, in painting, the laying one strong lively colour over another, without any shade or softening. This hath always a disagreeable effect.

CYLINDER, is a round solid, having its bases circular, equal and parallel, in the form of a rolling-stone.

CYMATIUM, in architecture, a member, or moulding of the cornice, the profile of which is waved, that is, concave at top, and convex at bottom. This is oftentimes called also *doucine gerge*, or *gula recta goletta* by the Italians, but most usually Cymatium, among us, being the last or uppermost member, q. d. the cima or summit of the cornice.

Some write it *Simaise*, from *simus*, an ape, or *camus* flat-nosed; but this etymology seems not proper; the beauty of the moulding consisting in its having its projecture equal to its height. M. Felibien indeed will not allow of this etymology; and contends, that the moulding is not so denominated from its being the uppermost member of the cornice, but upon its being waved, which is the opinion of Vitruvius. Vitruvius
does

does not confine Cymatium to the cornice, but uses it indifferently for any similar moulding, wherever he meets with it. In which he differs from the most accurate among the moderns. Felibien makes two kinds of Cymatiums, the one right, and the other inverted; in the first, that part which projects the farthest is concave. In the other part that projects farthest is convex, called *cula inversa* or *salon*. The English architects do not usually give the name of Cymatium to these mouldings, except when they are found on the tops of cornices. But the workmen use the name indifferently, wherever they are found.

Tuscan Cymatium consists of an ovolo or quarter round. Philander makes two Doric Cymatiums; of which this is one. Baldus calls this the Lesbian astragal. Lesbian Cymatium, according to Vitruvius, is what our architects otherwise call talon, viz. a concavo-convex member, having its projecture subduple its height.

CYPRESS-TREE, is one of the ever-greens, and very proper to mix with pines and firs in forming clumps. The wood of the cypress is very valuable when grown to a size fit for planks, which it will do in as short a space as oaks; therefore, why should this not be cultivated for that purpose, since there are many places in England, where the soil is of a sandy or gravelly nature, and seldom produces any thing worth cultivation? Now, in such places these trees would thrive greatly, and contribute to the pleasure of the owner, while growing, and afterwards render as much profit to his successors as perhaps the best plantation of oaks, especially should the timber prove as good here, as in the islands of the Archipelago, which there is no reason to doubt of: for we find it was so gainful a commodity to the island of Candia, that the plantations were called *Dos Filæ*; the selling of one of them being reckoned a daughter's portion. The timber of this tree is said to resist the worm, moth, and all putrefaction; and is said to last many hundred years. The doors of St. Peter's church at Rome were framed of this material, which lasted from Constantine the Great, to Pope Eugenitus the Fourth's time, which was eleven hundred years, and were then sound and entire, when the Pope changed them for gates of brass. The coffins were made of this timber, in which Thucydides tells us the Athenians used to bury their heroes; and the mummy chests, brought with those condited bodies out of Egypt, are many of them of this wood. This tree is by many learned authors recommended for the improvement of the air, and a specific for the lungs, as sending forth great quantities of aromatic and balsamic scents; on which account many of the ancient physicians of the eastern countries used to send their patients who were troubled with weak lungs, to the island of Candia, which at that time abounded with these trees, where, from the effects of the air alone, very few failed of a perfect cure.

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The timber of Cypress is useful for chests, musical instruments, and other utensils; for it resists the worm and putrefaction, because of the bitterness of its juice. It never rifts nor cleaves, but with great violence. And it may be worth observing, that the Venetians formerly made a considerable revenue of it out of Candia, till the forest there was set on fire, either through malice, or by accident, in the year 1400. It is reported it burnt seven years together, because of the unctuous nature of the timber.

The root of the wilder sort of Cypress is of an incomparable beauty, by reason of its crisped undulations. It was anciently made use of in building ships, by Alexander, and others. And some will have it, that Gophir, of which Noah's ark was built, was Cypress. Plato preferred it to brass itself, for writing his laws on.

D

DADO, in architecture, the die, or that part in the middle of the pedestal of a column which is between its base and cornice. It is of a cubic form, and thence takes the name of die.

DEAL, a thin sort of fir plank, of great use in carpentry. Deals are rendered much harder, by throwing them into salt-water as soon as they are sawed, keeping them three or four days, and afterwards drying them in the air or sun; but neither this nor any other method yet known, will preserve them from shrinking.

DECASTILE, in ancient architecture, a building with an ordonance of ten columns in front, as was the temple of Jupiter Olympius.

DECORATION, in architecture, whatever adorns a building, either without-side or within. The orders of architecture contribute a great deal to the decoration; but then the several parts of these orders must have their just proportion, characters, and ornaments, otherwise the finest order will bring confusion rather than richness. Decorations in churches are paintings, vases, festoons, &c. occasionally placed on or against the walls, but so discretionally, as not to take off any thing from the form and beauty of the architecture, as is much practised in Italy at the solemn feasts. Decorations also signify the scenes of theatres. The Decorations in operas, and other theatrical performances, must be often changed, in conformity to the subject. The ancients had two sorts of Decorations for their theatres; the first, called *Versatiles*, having three sides or faces, which were turned successively to the spectators. The other called *Ductiles*, which were drawn or slidden before others. The latter sort of decoration is still in use, and to greater advantage among us than the antients, who were under a necessity of drawing a curtain whenever a change was made in the Decoration, whereas the change is made in a moment, and without scarce being perceived upon our stage.

DECORUM,

DECORUM, in architecture, the suitableness of a building, and its several parts and ornaments to the station and occasion.

Vitruvius is very exact in this point, and gives rules expressly for the appropriating or suiting the several orders to their natural characters; so that a Corinthian column should not be set at the entrance of a prison or gate-house, or a Tuscan in the portico of a church, as has been done by some of our builders, who have offended even in the disposition of the offices in our ordinary houses; we often finding the kitchen set where the parlour should be; and that in the first and best story, which should have been condemned to the lowest and the worst. Some interpret Decorum to signify the observing a due respect between the inhabitant and habitation; whence Palladio concludes, that the principal entrance must never be regulated by any certain dimensions, but according to the dignity of the person who is to live in it; yet to exceed rather in the more than in the less, is a token of generosity, and may be excused with some notable emblem or inscription, as that of the *Conti di Bavilaqua* over his large gate at Verona, where probably there had been some disproportion committed: *Patet janua cor magis*, i. e. My gate is wide, but my heart is more wide.

DENTELS, ornaments in a cornice, in some degree resembling teeth, whence they have their name; *dens*, and in the plural *dentes*, in Latin, signifying teeth. Dentels are often employed in the entablature of the Ionic order; they are cut upon a little square member, and have the appearance of a row of teeth, some call this member the *denticulus*, and the Dentels, *dentes* or teeth; others use *denticle* for the Dentels. They are in general indifferently called Dentels, dentils, and dentiles. The breadth of the Dentell should be half its height, and the interval or interdensation two-thirds of the breadth; this is the proportion allotted by Vitruvius. Anciently, Dentels were used only in the Ionic cornice, but they have since been introduced into others; the Greeks never put them under modillions, but later architects have not been so strict in this respect, though both reason and elegance recommend it.

DESIGN, in a general sense, the plan, order, representation, or construction of a building, book, painting, &c. In building, the term *ichnography* may be used, when by Design is only meant the plan of a building, or a flat figure drawn on paper; when some side or face of the building is raised from the ground, we may use the term *orthography*; and when both front and sides are seen, in perspective we call *scenography*.

Design is also used, in painting, for the first idea of a large work, drawn roughly, and in little, with an intention to be executed and finished in large. The art of painting has been by some of the greatest masters divided into the Design, or draught, the proportion, the expression, the *claro-obscuro*, the ordonnance, the colouring, and the perspective. It is the simple counter, or outlines of the figures or groupe intended

to be represented, or the lines that terminate or circumscribe them, such Design is sometimes drawn in crayons, or ink, without any shadows at all; sometimes it is hatched, that is, the shadows are expressed by sensible outlines, usually drawn a-crofs each other with the pen, crayon, or graver; sometimes again, the shadows are done with the crayon, rubbed so as that there do not appear any lines; at other times the grains or strokes of the crayon appear, as not being rubbed; sometimes the Design is washed, that is, the shadows are done with a pencil in Indian Ink, or some other liquor, and sometimes the Design is coloured, that is, colours are laid on much like those intended for the grand work. The essential requisites of a Design are correctness, good taste, elegance, character, diversity, expression, and perspective. Correctness depends on the justness of the proportions, and knowledge of anatomy. Taste is a certain manner of correctness, peculiar to one's self, and is not to be defined. Elegance gives a delicacy that not only strikes persons of judgment, but communicates an agreeableness that pleases universally. The character is what is peculiar to each object, wherein there must be diversity, inso-much that every thing has its peculiar character to distinguish it. The expression is the representation of an object, according to the circumstances it is supposed to be in. Perspective is the representation of the parts of a painting, or a figure, according to the situation they are in with regard to the point of sight.

Designing is the art of delineating or drawing the appearance of natural objects, by lines, on a plane.

DIAL, or SUN-DIAL, an instrument serving to measure time by means of the shadow of the sun. This word is derived from the Latin, *dies*, day, because indicating the hour of the day. The ancients also call it *sciathericum*, from its shewing the hour of its shadow. Sun-dials are differently denominated, according to their different situation, and the figure of the surfaces whereon they are described; as horizontal, ver-ricle, equinoctial, polar, direct, erect, declining, reclining, cylindrical, &c.

The first Sun-dial that was set up in Rome, was erected by Papyrius Cursor, about the year of the city, 447: for Pliny says, there was no mention on any account of time, but of the sun's setting and rising. This Dial was set up in the temple of Quirinus, but it went not right. About thirty years after this, M. Valerius Messala, says Varro, being consul, brought out of Sicily, from the taking of Catana, another Dial, which he set up on a pillar near the rostrum; but it not being made for that particular latitude, it could not go true. Nevertheless they made use of it for eleven years, and then Marcius Philippus, who was censor with Lucius Paulus, set up another that was more exact. The Greeks also were a long time without clocks and Sun-dials. Some ascribe the inventions of Sun-dials to Anaximines Miletius, and others to Thales.

There

There are many kinds of Dials mentioned by Vitruvius ; as one invented by Berofus the Chaldean, which was on a reclining plain, parallel almost to the equinoctial, there was an half circle upon it, and thence it was called Hemicyclus. Aristarchus Samius found out the hemisphere-Dial. And there were some spherical ones with a needle for a gnomon. The discus of Aristarchus was an horizontal Dial, with its limb raised up all round to prevent the shadow from extending itself too far.

Dial-planes are of two sorts. First, such as are made on the wall of a building. Or, secondly, such as are drawn on the tables of wood, commonly called Dial-boards.

The first sort, if they are made on brick work is done by plaistering on the wall with lime, sand, and hair mixed ; this if well drenched with linseed-oil, after it is dry, or as long as it will drink in any, and afterwards with oil and white lead, may be durable enough. But it will be a better way to temper the lime, sand, and hair with ox blood, which will be no great charge, but of great advantage ; for this mixture will equal in time the hardness of a free-stone, and keep the surface as much from the injuries of the weather ; but it must be afterwards painted white. If you are to work on a stone, the best way is to drench the stone with linseed-oil, and white lead, very thin, till it will drink no more ; then will the Dial you paint upon last the longer, and be the better prepared to resist the ruins of time.

Now for tables or Dial-boards of wood, they being most common, we shall give such directions for the making of them, as have been always found most profitable and fit for the purpose. The best wood for this work is the clearest oak, and the reddish fir, provided it be not turpentine. There is but little difference between these two woods as to their alteration by the weather, both being subject to split, in case they are bound, and have not free liberty to shrink with dry weather, and to swell with wet. But as to their lasting, oak appears to be the best of the two ; though good red fir that is hard will generally last the age of a man, if it be secured as such things ought to be. In working either of these kind of woods, first cut the boards to such a length as you intend the deal board should be, and so many of them as may make up the breadth designed ; then let them be jointed on the edges, and planed on both sides, and afterwards set to dry ; for it has been observed, that though boards have lain in an house ever so long, and are ever so dry, yet when they are thus shot and planed, they will shrink afterwards beyond belief, if kept dry. When they have been thought to have been dry enough, and will shrink no more, let them be again shot with good joints, and let every joint be secured by two wooden dove-tails, let in cross the joint on the backside ; but let this be done when the boards are glued together, and well dried. After they have been thus glued, and the joints are sufficiently

ciently dried, then let the face of the board be well planed, and tried every way, that it may be both smooth and true, and all of a thickness, as pannels of wainscot are commonly wrought. The edges must be thus true and even, that they may fit into the rabbet of a moulding put round it, just as a pannel of a wainscot does in its frame. This will give liberty to the board to shrink, and swell without tearing; whereas mouldings that are nailed round the edge, as the common way is, do so restrain the motion of the wood, that it cannot shrink without tearing; but board wrought after this manner will last a long time, without either parting in the joints, or splitting in the wood.

Dials are sometimes drawn on planes lined with copper or lead, that they may be free from splitting or tearing; but a board (if it be prepared as above directed) is thought preferable to them in many respects, as it is much cheaper: besides, lead and copper too, will swell with the heat of the sun, and grow in time hollow outwards or convex, instead of a perfect flat, so that the truth of its shadow will be much injured. The colours will be apt to peel from the metal, and the Dial will by that means be sooner defaced, than if it were painted on a wooden plane. Before you begin to paint, it will be absolutely necessary to make a draught of your Dial on paper; your board being ready, and your colours prepared, then proceed as follows.

Take Spanish brown, that has been well ground, and mixed moderately thin, and with a large bristle-brush dipped in it, colour the board or plain all over, on the back as well as on the fore side, to preserve it the better, so that no part be left uncoloured; this is called the priming of a Dial. When this first colour is dry, do it over again with the same colour, tempered somewhat thicker; and when this is also dry, you may, if you please, do it over again with the same colour; the work will be the better, and last the longer. This being done, then colour the face of the Dial plane over with white lead; and when that is dry, work it over again three or four times more, successively after each drying; and so will the face of the Dial-plane be sufficiently defended against the violence of the weather. When the last colouring of the white is drawn, you must draw on the plane, with a black lead pencil, a horizontal line, so far distant from the uppermost edge of the Dial, as your discretion shall think fit, or your experience finds shall be most becoming the plane; then set out the margin of the Dial with boundary lines for the hour, half hour, quarters, and quarter-divisions of the Dial, as you see done in most Dials. When the margin and boundary lines of the Dial are set out, then take your paper-draught, that has been fairly drawn, and place the horizontal line of that, on the horizontal line that you before drew on the plane; in doing of which, observe to place the centre according as the situation of your plane, for convenience sake, requires. Thus if your
Dial

Dial be a full south-Dial, then let the centre be exactly in the middle of the plane; but if your Dial decline from the south, either east or west, then place not the centre of your draught in the centre of your plane, but nearer to one side or other of it, according as it declines, having also regard to the quantity of its declination.

As for example; if your Dial decline eastwards, then let the centre of your draught be placed between the centre and the eastern side of your plane, the quantity thereof must be according as your Dial declines: if it declines but a little, then place the center of your draught but a little from the center of your plane; and if it declines much, place the centre of your draught the more out of the centre of your plane. The reason of advising this, is that by so doing you may gain a greater distance for those hour-lines, which in declining planes, fall nearer together on one side than they are on the other; for which reason, it is usual so to do in declining planes, except they decline far, as between eighty and ninety degrees; for in this case, they are commonly drawn without centres, to gain the greater distance for the hour lines. When the paper draught has been thus artificially placed on the plane, and fastened with pins, or small tacks, then let the draught of it be transferred on the plane, by laying a ruler over every hour and quarter division, and where the ruler cuts or intersects the boundary lines of the margin, there make marks, by drawing lines with a black lead pencil, of such a length as each division requires, or is designed by your boundary lines, observing always to draw the hour and half hour lines quite through your margin, that they may be guides for the right placing of the figures, and for a small spot that is usually placed in the margin, right against the half hour. When this Dial-draught has been thus transferred to the plane itself, you must not forget to draw the substilar line according as it lies in your draught, to be a guide for the right placing the stile or cock; for you must be very exact in every particular, or else the Dial will not be right.

Every thing that is required being taken from the draught, and transferred to the plane, then take the draught off, and with vermillion well ground and prepared, let the boundary lines of your Dial, as also the hour, half hour, and quarter division be drawn therewith; let your colour be as thick and as stiff as you possibly can work it, so as to draw a clear and smooth line; because this is to be done but once. When your vermillion lines are drawn, then make the figures with lamp-black, and a spot in the middle of the margin, right against the half-hour line, and, if you please, in the margin at the top of your plane, you may put the date of the year, your name, and some sentence as is usual in things of this nature. Then fit in your cock, so as to make right angles with the plane. So shall your Dial be drawn, and finished in all respects as a plain Dial ought to be.

Before we dismiss this article, it will be necessary we direct the student to the best authors who have wrote on the subject of Dialling. Stirrup's Dialling will be found of great use to the student, teaching him the knowledge of the sphere, that he may understand the nature and reason of Dials. Collins's Dialling is a very useful book. In Leybourne's Dialling you have the best instructions for drawing east and west Dials, and for decliners. Lastly, Collins's sector on a quadrant, in which you have represented the cut of a scale, that by knowing the declination, gives all the requisites of an upright decliner, by inspection only, with as great accuracy, as the most correct calculation; besides, it teaches the way of drawing the hours of a Dial by a tangent line, and also by the scale of hours; two of the best and most expeditious ways that ever have been yet discovered.

DIALLING GLOBE, an instrument of brass or wood, with a plane fitted to the horizon, and an index, so contrived as to give a clear illustration of the principles on which Dials are made.

DIALLING-LINES, or Scales, are graduated lines placed on rulers, or the edges of quadrants and other instruments, to expedite the construction of dials.

DIALLING-SPHERE, an instrument made of brass, with several semi-circles sliding over each other upon a moveable horizon; serving to demonstrate the nature of spherical triangles, as well as to give the true idea of drawing dials on all sorts of planes.

DIAMETER, in geometry, a right line passing through the center of a circle, and terminated at each side by the circumference. The chief properties of the Diameter are, that it divides the circumference of a circle into two equal parts. Hence we have a method of describing a semi-circle upon any line, assuming its middle point for the center. The Diameter is the greatest of all chords. The Diameter of a curve is a right line that bisects the right lines drawn parallel to one another; and are either of a finite or infinite length. Although a right line, bisecting all parallel lines drawn from one point of a curve to another, is taken in a strict sense only for the Diameter of a curve-line, yet it may not be amiss more generally to define a Diameter, in saying, that it is that line, whether right or curve, which bisects all parallels drawn from one point of a curve to another; so that, according to this every curve will have a Diameter; and thence Sir Isaac Newton's curves of the second order have all either a right lined Diameter, or else the curves of some one of the conic sections for Diameters; and many geographical curves of the highest orders may also have for Diameter curves of more inferior ones, and that *ad infinitum*.

Diameter of a Sphere, is the Diameter of the semi-circle, by whose rotation the sphere is generated; in which sense it is the same with axis.

Diameter

Diameter of a Column, in architecture, its thickness just above the base. From this the module is taken, which measures all the other parts of a column. Diameter of the swellings is that taken at the height. Diameter of the diminution of Columns is that taken from the top of the shafts.

DIASTYLE, the term by which the old architects expressed that intercolumniation, or space between columns, which consisted of three diameters of the column; others call this a space equal to four diameters. The word does not determine any thing from its derivation, which is only from the Greek *δια*, *between*, and *σῦλος*, *a column*, so that it may express one distance between as well as another.

DIE, a term used to express a squared naked piece. Thus the body of a pedestal, which is that part between its base and its cap, is called the Die of the pedestal. It is also a name by which some call the abacus.

DIGGING, the Digging of the ground for cellars, and for the foundations of buildings, is commonly done by the solid yard, containing twenty-seven solid feet, which is commonly counted a load. Therefore take the dimension in feet, multiply the length by the breadth, and the product by the depth, and then divide the last product by twenty-seven, and the quotient will give the content in solid yards.

DIMENSION, is the extension of a body considered as capable of being measured. Hence, as we conceive a body extended and capable of being measured in length, breadth and depth, we conceive a trine Dimension, viz. length, breadth, and thickness. The first is called a line, the second a surface, and the third a solid.

DIMINUTION, a term expressing the decrease in thickness in a regular column. In Gothic buildings we see pillars of an enormous height in proportion to their thickness, and all the way up of some diameter; in regular building the column diminishes in the upper part, and it is natural that it should do so, for the first columns were parts of trunks of trees, and they must have from nature this Diminution, which the ancients had the judgment to preserve in the shape of their artificial columns. The Diminution generally begins from one-third of the height of the column; some make it begin from the very base, so that the column is smaller all the way up, but the first is the general and the best method; this other has not nearly so good an effect.

The Diminution in the Tuscan order is usually the greatest of all; it is commonly made a fourth part of the diameter of the column at the base; but antient buildings do not warrant this; in the Trajan column the Diminution is but one ninth of the diameter. The Diminutions are very indifferently proportioned in columns of the same order in different antique remains; and Vitruvius would have this contraction in thickness proportioned to the absolute height of the column, rather than to the contraction

sideration of any particular order : if a column be fifteen feet high, he directs the Diminution to be one sixth of the diameter ; and if it be fifty feet, he would have it only one eighth ; but the practice of the antique, as well as later architects, differs extremely upon this head ; scarce any thing is so far from being determined.

DIPTERE, a term used by the ancients to express a temple encompassed with a double row of columns ; it is derived from the Greek διπτερος, formed of δις, twice, and πτερος, a wing, and expresses a building with two wings. When a building was encompassed with a single instead of a double row of columns, it was called the *pseudo Diptere*, or *false Diptere* ; the two rows formed of a kind of porticos, which they called wings.

DISPOSITION, in architecture, the just placing of the several parts of an edifice, according to their proper nature and office.

Disposition of pictures and paintings ; the manner how, and where noblemen and gentlemen, who are possessed of a choice collection, should have them placed in their different apartments. 1. Antique works, or grotesque, may become a wall, and the borders and friezes of other works ; but if there be any draughts in figures of men and women to the life on the wall, they will be best of black and white, or of one colour heightened : if they be naked, let them be as large as the place will afford : if of marble columns, aqueducts, arches, ruins, and cataracts, let them be bold, high, and of large proportion. 2. Let the best pieces be placed to be seen with single lights ; for so the shadows fall naturally, being always barred to answer one light ; and the more under or below the light, the better, especially in mens faces, and large pieces. 3. Let the porch or entrance into the house be set out with rustic figures, and things rural. 4. Let the hall be adorned with shepherds, peasants, milk-maids, flocks of sheep, and the like in their respective places, and with proper attendants ; as also fowls, fish, and the like. 5. Let the stair-case be set off with some admirable monument or building, either new or ruinous, to be seen and observed at a view passing up ; and let the cieling over the top-stair be with figures fore-shortened, looking down out of the clouds, with garlands, and cornucopias. 6. Let landskips, hunting, fishing, fowling, histories, and antiquities, be put in the great chamber. 7. Let the pictures of the king, prince, or other great personages ; or their coats of arms, be placed in the dining-room. 8. In the inward, or withdrawing chambers, put other draughts of the life of persons of honour, intimate or special friends, or acquaintance ; or of artists only. 9. In banqueting-rooms, place chearful and merry paintings, as of Bacchus, centaurs, satyrs, syrens, and the like, forbearing all obscene pictures. 10. Histories, serious subjects, and the best works become galleries, where any one may walk, and exercise their senses in viewing, examining, delighting, judging, and censuring. 11. Place castles, churches, or some fair

fair buildings in summer-houses and stone-walks. In terrasses, put baskage and wild works. Upon chimney-pieces only landkips, for they chiefly adorn. 12. Place your own, your wife and childrens pictures, in your bed-chambers, as they best suit the private rooms, and are most agreeable to modesty, least (says an author) "if your wife be a beauty, some wanton guest should gaze on it too long, and commend the work for her sake." 13. In hanging pictures, if they hang high above reach, let them bend somewhat forward at the top, because, otherwise, it is observed, that the visual beams of your eye which extend to the top of the picture, appear further off than those of the foot.

DISTEMPER, in painting, a term used for the working up of colours with something besides water or oil. If the colours are prepared with water, that kind of painting is called limning; and if with oil, is called painting in oil, and simply painting. If the colours are mixed with size, whites of eggs, or any such glutinous, or unctuous matter, and not with oil, then they say it is done in Distemper. In this manner the admirable cartoons, late at Hampton-court, but now at the Queen's Palace, are painted. The greatest disadvantage of distemper is, that it has no glittering, and all its colours look dead, by which means they appear alike in all sorts of lights, which oil colours, or even colours in Distemper, when varnished do not.

DISTRIBUTION, in architecture, the dispensing of the several parts and pieces which compose a building, as the plan directs. The Distribution of ornaments, is an equal orderly placing of the ornaments in any member of architecture.

DISTRYGLYPH, in architecture, the space between two triglyphs.

DOME, in architecture, a spherical roof, raised over the middle of a building, as a church, hall, &c. by way of crowning. Domes are the same that the Italians call *couppola's*, and we cupola's. Vitruvius calls them *tholi*. They are generally made round, or resembling the bell of a great clock; but there are some instances of square ones, as those of the *Louvre*; and also some of them are in the form of Polygons, as that of the jesuits church in the Rue St. Anthoine at Paris. Domes have commonly columns ranged around their outsides, both for the sake of ornament, and support to the work.

DOORS. Two things are to be considered in the design of a Door, the first its aperture, and the second its ornaments. These must both enter into the mind of the architect who is designing an edifice, or he will never proportion or adapt it to the structure. How often do we see in London, Doors which appear not to belong to the house, but to be joined to it against nature, not raised with the building. It is common to see Doors whose breadth occupies near one half of the extent in front; and in Dover-street there is one whose top covers half the window placed over it

in the upper story. This is the error of those who mean to be magnificent; but the opposite is too common in plain houses. Doors are put which seem to say, no fat man comes into this house, and they always disgrace the whole building.

The variations in the antique are in this instance very great; and from this it was that Palladio evaded giving rules for the dimensions of Doors in proportion to houses. He was sensible he could lay down none against which some instance might not be brought, in those buildings which were allowed masterly in their kind; and he therefore left it undetermined. There are many things in which the antient architects have erred, and it will be a double error in us to copy their faults. They did not in general make the aperture equal all the way, but contracted it upwards. This must have had a strange effect. A Door narrower at the top than the bottom must have appeared a deformity in any building. The limits of these things are not fixed at any certain point, nor are the powers of genius fettered by such boundaries. While we admire the dignity of the Grecian or the pomp of the Roman Doors, let us see also this contraction as an egregious error, and if we refer to Palladio, or to the oracle of Palladio, Vitruvius, on this account, let it be to dissent from their opinions. With regard to the Italian, he was lost in the diversity of what he read, and what he saw; as to the Roman, he seems to have received it as a law in the science, that there should be this contraction; and when he directs that in Doors of more than thirty feet height in the opening, there should be no contraction of the diameter, his commentator Philander, who rarely misses his sense, says this was, because at that height the nature of vision answered the same purpose; and the contraction was given to the eye by distance.

The architect will see by this free disquisition, that the antients are not proper instructors in the dimensions of Doors; how much soever we may learn from them respecting their ornaments. He will see also, that the most famous of the moderns has left him uninformed on this head: and if he looks into the common books of designs he will find nothing but absurdity.

With respect to the height of Doors in the aperture, there is an universal law in reason, though not observed; there is a certain height below which they must not be, though for dignity and proportion the field in which they may exceed is almost unlimited. The human stature is the mark for the least height that can be proper; he who makes a Door is not to descend below this established proportion. For the lowest Door then the height must be such, as that a man of the highest common stature may go through it without stooping. This limits the measure to six feet; below this the Door of no house should be made, even of the plainest; but all above is left to fancy guided by the general idea of proportion.

tion. The height being thus determined, the breadth comes into consideration; the sides must be so distant, that they must not reduce a man to enter with his arms in any particular posture; as he is to go in without stooping, so he ought to be able to walk in at ease. The smallest dimension therefore in breadth that can be allowed is three feet; and this being half of the given height has a very good effect in respect of general proportion.

These are the rules laid down by nature, and these being allowed as truth, become the foundation of all the other proportions. While we are near this, we are sure not to err; and this ought always to be kept in remembrance for that purpose. He would have reason to complain of the confined laws of the science, who fancied that from this every Door must be made the exact double of its breadth in height; there are peculiar constructions which require particular measures; but as in all other cases there are bounds which must not be transgressed, so in this there is a latitude, as we shall shew, within which the fancy may rove, but which it must not pass. We have said, that for the plainest Doors the proportion of height to breadth must be double; this is to be a little varied at the pleasure of the architect, and he must thus employ his liberty.

If the front of the house extend considerably in breadth, in proportion to the height, the Door must be adapted to it, by having a proportion of breadth somewhat too great for its height; upon the preceding principles, and in the same manner, if the building be one of those which rise to a height without any great breadth, the Door for it should be made a little more than twice as high as broad, to accommodate the figure of that as of the other parts to the form of the whole. These are liberties he is to take, but they must be taken with discretion; great variations from common proportions will be always wrong; and it is never needful, because a Door is so obvious a part, that lesser will be seen.

The form and dimensions of Doors having thus been established upon some principles, we are to consider their position. This varies according to their distance from the level of the ground, and is to be governed by the height of the floor to which they belong. In the plainest and most ordinary houses the Door is upon the level of the ground, but this is wrong for a very obvious reason. There is to be some settling expected in the house, and experience shews, that the ground in all inhabited places naturally rises in surface. Therefore a house whose floor of entrance was placed originally upon the level of the ground, will in a few years, from the concurrence of these two accidents, or from one of them, be below that level; the Door will then stand below the surface of the ground, and we must go down stairs into the house; this is to be avoided both for shew and service. A floor under the level of the ground will be damp, and the Door, if well proportioned at first, it will be too low for its breadth, at least it will appear so, which in this respect is the same thing. This is a
reason

reason why a Door should never rest upon the level of the ground ; but if against all rule the builder or the owner will have it so, the proportion to be observed is this ; it must be made somewhat high in an over-proportion to the breadth, because the eye at first will reduce it to the appearance of regularity, and probably accidents afterwards will place it below it.

Hence is derived a principle that ought to stand as unalterable in itself ; that the more the Door of a house is raised above the level of the street the more its breadth should exceed the natural proportion with respect to height. This depends upon the nature of vision, which in these near objects ought always to be consulted ; for the higher the Door is placed the narrower it will appear by distance, and therefore the broader it should be made in the reality. These are points which deserve to be considered much more strictly than they are, for upon them depends entirely the proportion. In the earliest architecture we find, that the custom was to place the Door at a considerable height above the level of the ground ; and in all magnificent buildings it should be thus raised, and in others in proportion to their size. The raising the Door after the old Greek manner gives many advantages. The floor to which it opens has elevation, better air, and the advantages of prospect. There is the benefit to it by flights of steps, which, whether single or double, are of great ornament, and may be carried to any degree of elegance, according to the pleasure of the purchaser ; it also gives a good floor for the use of the servants. For all these reasons we see it best to give the Door an elevation, and we have directed the architect to the only method by which one of this situation ever can be rendered truly graceful.

We are now naturally led to the ornaments of Doors, and are to propose, as their first and greatest decoration, the use of the orders. They are the noblest and most graceful part of architecture, and are therefore suited to what is to make the first impression, as a Door naturally does. Their expence is no where an article of so little consideration, because they are here smaller and fewer than in the common uses ; and the architect of taste has this reason to be pleased with them, that he has in their construction a scope for all the boldness of his genius, and the best flights of his regulated fancy. Great variations are authorized by the remains of antiquity in the construction of every one of the orders ; in the ornaments of Doors there is full scope for the imitation of all those of the antients, and for the devising new ones ; and from this may arise a dignity and grace unknown hitherto in architecture. From these he may select what will best suit the purpose of every particular Door ; for it will be proper for him to give the greatest heights to his columns and their capitals, where the Door is to be, according to its situation, narrower than usual in respect of height ; and on the contrary, to select those columns from among our examples of each order, which are lowest, where the
Door

Door is broader than the exact proportion of height would dictate. This is the true use of these remains of the antique, and by such a method of employing them they will obtain as much credit for the architect, as in a random choice they would disgrace him.

One thing remains to be observed with respect to the diminution of columns used in ornamenting Doors, that the greater this is, the less they are suited to the purpose. This is one of many reasons that ought to banish the Tuscan order from this piece of service. Its diminution is not only the greatest of that of any order; but it is greater beyond all proportion, and looks as if ill-formed, where it is made with ever so much truth. The other orders are no way more happily used than for this purpose; their diminution is the great grace of their form, and it is never shewn so plainly or conspicuously. The upright of the Door-case, before which it stands, is a measure to the eye, and the whole being near, and the form of the column distinct, the diminution is seen in the whole outline. This is a very obvious reason for preferring columns to the vulgar custom of pilasters upon this occasion; but at the same time, as we have observed already, the peculiar diminution of the Tuscan being too great to be borne, on so near and so distinct a view, should exclude it from this use in the ornaments of Doors. Having treated on the use of columns in the ornament of Doors, we now proceed to shew the young architect the use of the more elegant orders in Doors.

The greatest decoration of Doors is by means of the orders. The Tuscan is in general the least fit for the purpose; therefore there remain to be considered only the two more rich and elegant to be appropriated to this use. A plain opening left in the wall was doubtless the first Door-way, and it continues the plainest; it were well if we could not say, it would be to the advantage of many decorated entrances to good houses, if all the expence could be removed, and the opening left naked as it came from the hand of the bricklayer. From the plain Door-way, the advance to that ornamented with the lowest order is by many stages, and in all these there is such a thing as plain propriety, which only a misguided fancy could transgress. The great error is that of crowding ornaments of a superior kind into a work of an inferior; this is as absurd in the least things as the greatest. The capital of the Corinthian order put upon a Tuscan column, could not be more monstrous than the bringing in here the decorations of one kind to the plan in another. When the Doric with its best proper decoration does not appear rich enough, instead of adding what is unfit, the architect should choose the Ionic, and the same rule holds here universally; let the builder see in this light. If a Door with an architrave cannot be made rich enough by proper sculpture to please the eye of the possessor, let him not introduce into it the decorations appropriated to other kinds; but at one advance from that plan

to design with an order, and laying aside the other entirely adhere to this.

There is nothing absurd but from the mixture of improper parts; and nothing is ridiculous that is not absurd; therefore let him keep only propriety in his mind, and he will be sure to escape censure. The plainest Door that has proportion in its dimensions, and propriety in what is placed about it by way of ornament, will give satisfaction not only to the judicious, but to every eye, while ill-judged ornaments raise contempt. Let it be an universal rule deduced from this principle, that where there are not columns introduced, there should be no resemblance of them. With what disgust does the judicious eye look at the Door where the conceit of the architect has formed a half column out of some of the mouldings, which running up to enclose a compartment above the Door, together with it, fifteen diameters in height, and has a fancied capital to crown the absurdity? What contempt must this unnatural Gothic piece of business raise in all who look upon it? If the architect will have any resemblance of a column, let it be a column in due proportion; a little judgment will direct how to dispose the compartment above; and less expence than pays for this absurdity will finish the work with propriety.

The original thought of decorating a Door-way was no more than by a plain case of wood with a bead at its edge. The sharpness of the corner, or angle of the brick-work was disagreeable, as also its roughness; and being a sharp edge of a weak substance, it was broke and made irregular by every little accident. This put it in men's minds to case or cover it with board; and the inconvenience of its sharpness made them cut a moulding, by way of bead, or plain astragal, all the way its length. Thus were Doors ornamented in the earliest times of building, and as they were then under the conduct of men of true taste, they were able to proportion the breadth of the wood-work to the opening of the Door, and terminating at the extreme edge with another astragal, there was a plainness, but still there was a propriety and use; and when these unite, there never wants beauty to the discerning eye. As the plain breadth of boards offended the eye, the old architects carried up along its middle a festoon of various contrivance. The oak leaves and fruit gave the first hint; the olive succeeded this, and afterwards the vine; this gave a beautiful freedom from its ramping figure, which they knew how to restrain with judgment, and from this they reached the acanthus leaf, in their judgment the height of vegetable beauty. From thence they began to diversify the festoon with symbols and instruments of sacrifice, and thence they came to hieroglyphics. As the plain case of the Door received this ornament, the bead at its edge swelled by degrees, by the addition of more and larger mouldings, to an architrave. This was finely varied, and the freeze which crowned it at the top received all the decorations of sculpture

sculpture given to the pannel. Thus far advanced, the orders were introduced naturally, and here among those great builders ended the decoration.

Thus began, and thus was raised to perfection, the decorations of Doors among the Greeks and Romans. Here they stopped, for they had judgment; but the luxuriant fancy of those who followed them, admiring their works, but wanting the taste which regulated them, flew into every absurdity that the whole scope of things could afford. Of this we see instances in many expensive works which stand, to disgrace our country; and we have models of them, and of others as ridiculous, proposed for imitation, and published, as the titles say, for the instruction of builders. We have seen architecture, a science founded upon the soundest principle, disgraced by ignorant caprice, and fashion lately has attempted to undetermine and destroy it by the caprice of France, and by the whims of China.

How must it disgust a man of true taste to see, in some of the best buildings in France, famed as it would pretend, for the encouragement of arts, Corinthian capitals made of cocks heads, instead of leaves of the acanthus? And this most absurd variation from the figure and design of the antique, give to its inventor the glory of having added a sixth order. It is called the French, and let them have the praise of it; the Gothic shafts and Chinese bells are not beyond or below it in poorness of imagination. Upon the most impartial review we shall find, that nothing in greatness or in grace, can compare with the Greek and Roman architecture; therefore let us employ nothing in the place of them.

The richness of an order depends upon its natural form; but a great deal may be done in the article of improvement and elegance, by the materials that are employed, and by the additions of sculpture. No absolute direction can be given in this respect, for the expence of the different kinds is so various, that the choice of the proprietor alone can be consulted. We may consider the materials for the orders intended for this use to be, in England, three; wood, stone, and marble: of these three wood is by much the most universal. It is the cheapest in itself; it is sufficiently lasting; and it receives the chissel freely, and retains its smallest strokes very safely. Therefore this is to be considered as the natural material in England, and it serves equally well either for the outside Doors or those within. Stone has an air of grandeur which wood has not; nor can any painting or any artifice give it; but this is naturally to the outside Door. Marble has, with a much greater dignity, a noble and peculiar elegance. It serves equally within Doors and without; but the weight of this and stone should confine them within the ground floor.

We have instances of enriching even marble columns, by placing upon them in the Corinthian order, capitals of brass; but this is an unnatural and foolish addition. The colours of the brass and the marble are so different,

ferent, they never can agree one with another as two parts of an entire body; and the marble itself bears to be wrought with all the needful raffings, and shews them very happily. The addition of brass therefore we wholly reject; it is expensive, unnatural, and unbecoming. Such as have been at the expence of granite Corinthian columns on some occasions, have added capitals of gilded brass; which have had their admirers. The reason of casting their capitals in brass was, because we have not tools to cut them in the granite: but in this case it would have been better to have wrought this fine material into columns of an inferior order, as the Doric, where the capital being plain, the whole might have been uniform, and of a piece; for undoubtedly the same tools, and the same hands, which could round the column, could also form the capital of this plain, tho' noble, order.

There is no part of an edifice in which sculpture can be so happily employed as about a Door-case: every eye perceives it; and it does not infer a necessity of continuing the same work throughout the house; for a Door is a detached piece; and it is expected to be ornamented. We see in many instances a great deal of labour in this way employed upon Door-cases; but it is rude, harsh, and unfinished. It is better one good piece, though small, should stand in some conspicuous part alone, than that all this scattered indifferent work should glare without approbation. If our painters want genius to give designs in this kind, the treasures of antiquity are inexhaustible; and our frugal ancestors, like ourselves, have made so little use of them, that they are new. What a variety of decoration might the ingenious sculptor adopt from the ruins of Palmyra? How bold and noble are the bas reliefs of the Parthenian? Indeed what is there of the ornamented kind, among all that is left us of antiquity, where various lessons may not be found under this head? Which of all their works do not afford hints for the sculptor of genius to follow?

While we prefer the enriching our Door-cases by the hand of art to the more expensive treasures that are to be had from nature, we must observe, that some regard should be paid to each. The materials should be adapted to the workmanship; for it would be a pity to bestow labour and genius upon such materials as would disgrace them; or upon such as would not long enough support themselves against the force of accidents. Stone moulders quickly when exposed to the air; therefore when a very elegant Door-case is intended for the outside, the proprietor should not grudge the use of marble.

In the same manner with regard to the Door-cases for rooms in which these orders shall be admitted, the choice naturally falls upon wood; but there is as much difference between wood and stone, as between stone and marble. Our fathers worked in oak, a wood unfavourable to the tool, but which, in their masterly hands, admitted every stroke, and repaired the
toil

toil with immortality : we now use fir, the weakest, and poorest of all woods that could have been employed for this purpose ; and we can give for this but two reasons, equally mean ; these are, that it comes cheap, and cuts easy. It will not admit of those delicate strokes which have eternalized the chissels of our fathers ; nor support itself, in those tender parts into which they cut their fine works. We have the same materials in which they wrought, and not one kind, but many, of wood that will be very useful for the purpose. The pear-tree is famous, and the maple more ; this last was known in the earliest time of which we have account, and celebrated for its excellence for this purpose ; what then is the reason our people do not use them ? They cut as freely as deal, and they are not nearly so liable to break off in pieces to the discredit of the work. It is not needful the whole Door case should be made of such wood ; no, not the whole columns ; let those who calculate expence so nicely, save in these articles, and only make the pieces of this wood that are for sculpture, the capital of a column, the ornaments of a freeze, or the like. The difference of colour, to us who cover all with paint is nothing ; and the work would shew in a finer manner, and would be much more lasting.

One caution we shall give the architect in this case, which is, that he cause a careful and judicious painter to be employed where there is carved work ; for the nicest strokes of the chissel will be lost if clumsily covered with paint. Two things are essential to be considered in the painting of carved work ; the first is, to use such a colour as shall cover the work without clogging it, and the other is to lay it on in such a manner that it shall not need a speedy retouching. There may easily be contrived for this purpose a paint of a thinner body than ordinary, which will colour without loading ; and we know how poor an appearance the best piece of sculpture in wood makes when it has been two or three times painted. It is partly the badness of the work, and partly the destruction of it by frequent colouring, which has put carving so much as it is out of use at present. Indeed it is now threatened to be utterly turned out of doors ; and while the professors of the art submit to the comparison, they scarce deserve pity. The old deception of stamp-paper, instead of carved wood, is coming up with all the rage of fashion ; and we have the mortification to see his majesty's royal letters patent, lately granted to a gingerbread invention of this kind.

Our sculptors need do no more to banish this invocation, than to oppose their work well executed against it ; for there is no eye but will perceive the difference ; the cleanness and sharpness which follows the chissel can never be equalled by such contrivances, nor the stucco, when a tolerable hand fashions it. They are great in their designs, and they content themselves with the poorest execution of them. The judicious architect will tell them, that the plainest moderate-sized room, finished in a

workmanlike manner, is preferable to the largest defaced by these poor ornaments; and that it is better to have a Doric Door-case of wood, than a Corinthian or Composite of paper.

We have now considered the ornaments; we have explained to the student what he is to undertake, and in what manner to execute the great concern of the decoration of Door-cases, whether in the plain and common manner, or, with the highest grace the science affords for them, the orders of architecture. We have considered also the opening, and its dimensions and form; and all that remains is to treat of the Door itself, which is to close that aperture, and to occupy the center of the proposed decoration. The Door must be of due thickness to prevent its warping, and that must be farther secured also by its being made of seasoned timber, and framed in pannels. With respect to the kind of timber, notwithstanding the great variety our own country affords, that is reduced in a manner to two, oak and fir; against the first nothing can be objected, for it has both strength and beauty; but the other is inferior to many kinds of our own growth. The oak or wainscot Doors are appropriated to the better kind of buildings, and are intended to shew their true surface and their natural colour. These are often wrought with a great deal of beauty, and are an ornament in themselves, exclusive of the decorations. The fir or deal Doors are meant to be painted. They are most common in houses of least expence; and when they get into better edifices they are so well framed and wrought, that they often make no bad appearance. The advantage of these is their lightness; those of wainscot, of the same dimensions and diameter, being much heavier. Beside the wainscot, we see in some places inside Doors of great elegance and expence, wrought of mahogany, or inlaid with rose-wood, and decorated with sculpture. Either of these kinds are very elegant; and those who have been familiar with them, will not approve a painted Door in an elegant apartment.

The opening of the Door is next to fall under consideration, and the common architect will think, that he has no more choice than to place the hinges on one or the other side, so that it may open one way or the other, inwards or outwards: for one of these two ways he will suppose every Door in the world must open. But there is a way different from either of these, and it is a method of extreme elegance. A street Door opening inwards is of no inconvenience, because it opens into a hall, which is a room of no consequence; but this is not the case in the more elegant apartments, where the communication is by a Door in the partition wall, and the entrance immediately out of one room into another.

We will suppose the two principal rooms upon a first floor, communicate by a Door in the center of the partition. In an evening when they are lighted up, this Door is thrown open, and the furniture in both being
 alike

alike, it becomes as one apartment. In this case the Door, according to the modern custom, must open into one or into the other of the rooms, and into which soever of the two it is, it will there be a blemish; an awkward slanting piece, standing in the room with a disagreeable sharp angle. This may be prevented by making a cavity somewhat more than equal to the depth and substance of the Door in the thickness of the wall. Into this the Door may slide by a gentle touch, and remain undiscovered; and a handsome brass ring being fixed to the edge, it may come out again when it is to be shut with as slight a motion. This is done at the house of a gentleman near Hanover-square, and the manner of it there may serve as an example to other builders. The opening, in the usual way, is either by the whole Door on one side, or by half of it each way, the Door being composed of two, folding in the middle; but in either case it is not comparable to the method we have here proposed of sliding it into the wall on many occasions.

Last of all we come to the structure of the fabric of the Door itself: this should be contrived for strength, beauty, and straitness. All these purposes are answered by making it in many pannels. The folding, or half Doors, are best made of four pannels, two larger and two smaller; and the entire Door of eight. The framing must be sound, and the joints well secured. They may be varied in form many ways: but to be minute in these things shews a poorness of genius in the architect. The best form of the pannels is the plainest, and this is a long square; the two or four larger should be long upwards, and the other cross-wise. This is a construction that shews strength and firmness, and this is all that should be consulted here, the decoration belonging to the other parts.

DORIC, is the name of one of the five orders in architecture, it is one of the three antient orders of the Greeks. It is usually placed upon the attic base; the whole height is seven and an half or eight diameters; and its capital is plain, being formed only of mouldings; in the entablature the freeze is enriched with figures called triglyphs, to be explained under that head; the spaces between these are called metopes, and may be either left plain or decorated; and its cornice has drops. The Doric is the oldest of all the orders; and originally had no base; it is the most natural and best proportioned of them all. The first building in which this order was used was a temple at Argos, built to Juno, by Dorus, a king Achaia, from whom the order was afterwards named. It has been much enriched and embellished since its invention, so what is called Tuscan, comes in many things nearer the ancient Doric, than the order called by that name at this time. The ancient Doric is seen in great plainness in the remains of the Parthenian at Athens, and in the theatre of Marcellus at Rome. It is used at this time principally in strong buildings, gates, citadels, the lower part of churches, and the like, in which
places

places strength is more proper than elegance. The gate of Burlington-house, in Piccadilly, is of the Doric order. The triglyphs are supposed to be inseparable from this order; but we find them frequently omitted for the sake of cheapness in ordinary works; and there may be a reason sometimes for leaving them out, and making the freeze plain even in the most finished and elegant buildings. Vignola adjusts the proportions of the Doric as follows: he divides the whole height of the order, without the pedestal, into twenty parts, or modules; one of which he allows to the base, fourteen to the shaft or fust, one to the capital, and four to the entablature. The particular proportions of the several parts and members may be seen under their respective articles.

DORMER, in architecture, is the window made in the roof of a house, or above the entablature, being raised upon the rafters.

DORMANT-TREE, is a name given by workmen to a great beam lying cross a house, commonly called a summer.

DORMITORY, a gallery in convents or religious houses, divided into cells, in which the religious sleep.

DOUCINE, in architecture, is a moulding or ornament on the highest part of the cornice, in the form of a wave, half convex, and half concave. The Doucine is the same as a cymatium, or gula.

DOVE-TAILING, in carpentry, is a manner of fastening boards together, by letting one piece into another, in form of the tail of a dove. It is the strongest of the kinds of jointings or assemblages, wherein the tenon, or piece of wood which is put into the other, goes widening to the extreme; so that it cannot be drawn out again by reason the extreme or tip is bigger than the hole. It is called by the French, Queue de Aaron, i. e. Swallow-tail, which name is also used by the English themselves in fortification.

DRAW, a door is said to draw when in opening or shutting, it hangs or grates upon the floor, or cell.

DRAGON BEAMS, are two strong braces or struts which stand under a breast-summer, meeting in an angle upon the shoulder of the king-piece.

DRAPERY, in sculpture and painting, the representation of the cloathing of human figures, and also hangings, tapestry, curtains that are not carnations or landscapes. The art of Drapery consists, 1. In the order of the folds or plaits, which ought to be so managed, that you may easily perceive what it is they cover, and distinguish it from any thing else. Again, the folds ought to be large, as breaking and dividing the sight the less; and there should be a contrast between them, otherwise the Drapery will be stiff. 2. In the quality of the stuffs, for some make their folds abrupt and harsh, others more soft and easy; the surface of some have a lustre, others are flat and dead; some are fine and transparent, others firm and solid. 3. In the variety of colours, which, when well managed, makes

makes the greatest beauty of painting, all not being equally amicable and friendly with respect to each other, and some never to be placed near certain others. M. De Piles observes, that Drapery must never be made to adhere to the parts of the body; that a great motion and lightness of the Drapery are only proper in figures in great agitation, or exposed to the wind; and that the nudities of the figures should always be designed before the painter proceeds to the Draperies.

DRAUGHT, or DRAFT, in architecture, the figure of an intended building described on paper, in which is laid down by scale, the several divisions and partitions of the apartments, rooms, doors, passages, &c. in their due proportion to the whole building. It is customary, and convenient, for any person, before he begins to erect a building, to have Designs or Draughts drawn upon paper or vellum, wherein the ichnography or ground-plot of every floor or story is delineated; as also the form or fashion of each front, with the windows, doors, ornaments, in an orthography, or upright. Sometimes the several fronts, &c. are taken and represented in the same Draught, to shew the effect of the whole building, which is called scenography or perspective.

DRAUGHT-COMPASSES, such as have moveable points to draw fine Draughts in architecture.

DRAW-BRIDGE, a Bridge made after the manner of a floor, to draw up or let down, as occasion serves, before the gate of a town or castle. In navigable rivers it is sometimes necessary to make the middle arch of bridges with two moveable platforms, to be raised occasionally, in order to let the masts and rigging of vessels pass through.

DRIP, in architecture, are a certain kind of step, made on flat roofs to walk upon; a way of building much used in Italy, where the roof is not made quite flat, but a little raised in the middle, with Drips or steps, lying a little to the horizon.

DROPS, in architecture, an ornament in the Doric entablature, representing Drops, or little bells, immediately under the triglyphs.

DYE, in architecture, any square body, as the trunk, or notched part of a pedestal; or it is the middle of the pedestal, or that part included between the base and the cornice, so called because it is often made in the form of a cube or Dye. Dye is also used for a cube of stone, placed under the feet of a statue, and over its pedestal, to raise it, and shew it the more.

DYPTERE, in the ancient architecture, was a kind of temple, encompassed with a double row of columns; and the Pseudo Dyptere, or false Dyptere, was the same, only that this was encompassed with a single row of columns, instead of a double row.

E.

EAGLE, in architecture, a figure of that bird, anciently used as an attribute or cognizance of Jupiter, in the capitals and friezes of the columns of temples consecrated to that God.

EAVES, in architecture, the margin or edge of the roof of an house, being the lowest tiles,, flakes, &c. that hang over the walls, to throw off water to a distance from the wall.

EAVES LATH, a thick feather-edged board, generally nailed round the Eaves of a house for the lowermost tiles, flakes, or shingles, to rest on.

ECHINUS, is a term used sometimes to express the ovolo, or quarter-round, and sometimes for a part of the figures with which that member is usually carved. This last is the more proper and strict sense, and in the same manner ovolo, though usually employed as the name of the whole member, is more strictly expressive only of a part of its carving. The quarter round is usually carved with what are called eggs and anchors; the eggs are the part from which this has been called ovolo, *ovum*, being latin for an egg; these eggs have a kind of shell about them, beside their own, at a distance from their surface, and separating them from the anchors between; this is called the Echinus, Echinus being the name of the husk or shell of a chesnut, which it was meant to resemble. Echinus therefore is properly the name of the shell in the carving of the ovolo, or quarter-round, and it is improperly used for that whole member.

ECHO, in architecture, is a term applied to certain kinds of vaults and arches, generally elliptical parabolical figures, erected to produce artificial Echoes. Blanc, in his Echometry, at the end of his first book of the sphere, teaches the method of making an artificial Echo. Vitruvius relates, that in divers parts of Greece and Italy, there were brazen vessels artfully ranged under the seats of the theatres, to render the sound of the voices of the actors more clear, and make a kind of Echo; by which means the whole audience might hear with ease and pleasure. In Echoes, the place where the speaker stands, is called the Centrum Phonicum, and the object or place which returns the voice, Centrum Phonicampticum. At the sepulchre of Metella, wife of Craffus, was an Echo which repeated what a man said five times. And authors mention a tower at Cyricus, where the Echo was repeated seven times.

EGG, in architecture, an ornament in that form, cut in the echinus or quarter-round of Ionic and Composite capitals. The profile of an echinus is enriched with Eggs and anchors placed alternately.

ELBOW, in architecture, an obtuse angle of a wall, building, road, &c. which divides it from its right line.

ELEVATION, in architecture, the same with an orthographic, or upright draught of a building.

ELLIPTICAL-ARCH, a part or segment of the curve of an ellipsis. Elliptical-arches are frequently preferred to those that are circular in various kinds of buildings, because their span may be equal to those of the circle, without rising to so great a height; therefore they have been preferred in bridges; but it must be remembered that they will decrease in strength in proportion as they deviate from the circle.

ELM, is of singular use, where it may lye continually wet or dry in extremes, therefore proper for water-works, mills, ladles, and soles of wheel pipes, aqueducts, pales, ship planks, beneath the water line. Some of it found in bogs has turned like the most polished and hardest ebony. It is also of use for wheel-wrights, handles for single saws, the knotty parts for naves and hubbs; the straight and smooth for axel-trees; and the very roots for curious dappled works, kerves of coppers, feather-edge and weather-boards, trunks, coffins, and shuffle-board tables. The tenor of the grain makes it also fit for all kinds of carved work, and most ornaments belonging to architecture. Vitruvius recommends it for tenons and mortises.

EMBOSSING or **IMBOSSING**, in architecture, sculpture, &c. is forming, or fashioning of works in relievo, whether cut with a chissel, or otherwise; it is a kind of sculpture or engraving, wherein the figures project out from the plane whereon they are engraven, and according as they are more or less protuberant. It is called by the Italians *basso*, *mezzo*, or *alto relievo*, and by the English *bas relief*, *mean relief*, or *high relief*.

EMBRASURE, in architecture, the enlargement made of the aperture of a door or window on the inside of the wall, its use being to give the greater play for the opening of the door, or casement, or to admit the more light. When the wall is very thick, they sometimes make Embrasures on the outside.

EMPASTING, in painting, is the laying on colours thick and bold, or applying several lays of colours, to the end that they may appear thick.

ENCARPUS, a term by which some have called the representation of a festoon, on friezes, and otherwise, as an ornament in buildings; Vitruvius calls it by this name. These festoons were composed of fruits, flowers and leaves, and Encarpus expresses them best when composed of fruits, *καρπος* being Greek for fruit.

ENGINE, in mechanics, a compound machine, made of one or more mechanical powers, as levers, pullies, screws, &c. to raise, to project, or sustain any weight, or produce any effect which could not be easily effected otherwise. Engines are extremely numerous; some used in war, as the battering ram, balista, waggons, chariots, &c. others in trade and manu-

manufactures, as cranes, mills, presses, &c. others to measure time, as clocks, watches, &c. and others for the illustration of some branch of science, as the orrery, commentarium, and the like. In general we may observe, concerning engines, that they consist of one, two or more of the simple powers variously combined together; that in most of them the axis in peritrochio, the leaver and the screw, are the constituent parts; that in all a certain power is applied to produce an effect of much greater moment; and that the greatest effect, or perfection, is when it is set to work with four ninths of that charge, which is equivalent to the power, or will but just keep the machine in equilibrio. In all machines, the power will just sustain the weight, when they are in the inverse ratio of their distances from the center of motion.

ENTABLATURE, in architecture, the ornament supported by the capital on the top of a column or pilaster. Every column consists of its base, shaft and capital, and supports an Entablature; these together constitute the entire body, or order; and the Entablature, like the capital, differs in every order. The Entablature consists of three parts, the architrave, frieze, and cornice; the architrave is composed of one or more faces, and rests upon the capital; the frieze comes next, and is the middle part of the Entablature, the cornice is the top, or uppermost. In the Tuscan order the Entablature, is plain; in the Doric the frieze is decorated with triglyphs, or channelled figures; in the Ionic or other richer orders, the cornice is decorated with dentells, modillions, and a variety of ornaments. The Entablature, according to Palladio, should be a fifth of the height of the column, and this equally in all the orders, except the Tuscan, in which it is a fourth.

It is different in different orders: for notwithstanding it consists of the three before-mentioned divisions in all; yet these parts are made up of more or fewer particular members or subdivisions, according as the order is more or less rich. Vignola makes the Entablature a quarter of the height of the whole column in all the orders. In the Tuscan and Doric, the architrave, frieze, and cornice, are all the same height. In the Ionic, Corinthian, and Composite, the whole Entablature being of fifteen parts, five of these go to the architrave, four to the frieze, and six to the cornice.

ENTERSOLE, in architecture, a kind of little story, sometimes called a mezanine, contrived occasionally at the top of the first story, for the conveniency of a wardrobe, &c.

ENTRY, a Door, Gate, Passage, &c. through which we arrive at any place.

EPISTYLE, in the ancient architecture, a term used by the Greeks, for what we call architrave, viz. a massive piece of stone or wood laid immediately over the capital of a column.

EURITHMY,

EURITHMY, in architecture, sculpture, and painting, is a certain majesty, elegance, and easiness, appearing in the composition of divers members or parts of a body, painting or sculpture, and resulting from the fine proportion of it. Vitruvius ranks the Eurithmia among the essential parts of architecture. He describes it as consisting in the beauty of the construction, or assemblage of the several parts of the work, which render its aspect, or its whole appearance graceful; i. e. when the height corresponds to the breadth, and the breadth to the length, &c. From these three ideas, or designs, orthography, scenography, and profile, it is, that the same Eurithmia, majestic and beautiful appearance of an edifice, does result, which creates that agreeable harmony between the several dimensions, i. e. between the length, breadth, and height of each room in a fabric, so that nothing seems disproportional, too long for this, or too broad for that, but corresponds in a just and regular symmetry and consent of all the parts with the whole.

EUSTYLE, a term by which the ancients expressed the best and most elegant manner of placing columns, with respect to distance, or intercolumniation. Vitruvius says the Eustyle intercolumniation, or best distance of placing columns, is that of four semi-diameters and a half, that is two diameters and a quarter of the column. He says this manner of placing columns exceeds all others in strength and convenience, as well as beauty.

EXAGGERATION, in painting, is a method of representing things wherein they are charged to much, or marked too strong, either in respect to the design or colouring.

EXEDRÆ, in antiquity, a general name for such buildings as were distinct from the main body of the churches, and yet within the limits of the church, taken in its largest sense.

EXPRESSION, in painting, the representation according to its natural character, and the painter's invention, or plan. In portraits it must be seen whether the person is grave, gay, a man of business or wit, plain, gentle, &c. each character must have an attitude, the ornaments, and back-ground proper to it; and all about it must be expressive of the man, and have a resemblance as well as the features of the face. If the person has any particularities as to the position of the head, eyes, or mouth, if not unbecoming, they must be strongly expressed. There are a sort of moving features, and are as much a part of the man as the fixed ones: some things raise a low subject, and contribute more to a surprizing likeness than any thing else. If there be any thing particular in the history of the person which is proper to be expressed, it is a great improvement to the portrait, to them that know that circumstance. Robes, or other marks of dignity, or of a profession, employment, or amusement, a book, a ship, a favourite dog, or the like, are historical expressions, common in portraits. There are several kinds of artificial expressions practised by

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painters,

painters, because of the disadvantage of their art in that particular, in comparison of words. But there is no better school than nature for expression. A painter therefore should, on all occasions, observe how men look and act, when pleased, grieved, angry, &c.*

Love is expressed by a clear, fair, and pleasant countenance, without clouds, wrinkles, or unpleasant bendings, giving the forehead an ample height and breadth, with a majestic grace; a full eye, with a fine shadow at the bottom of the eye-lid, and a little at the corner; a proportionable nose; nostrils not too wide; a clear cheek, made by shadowing it on one side, and a smiling mouth, made by a thin upper lip, and shadowing the mouth-line at the corners. Fear is expressed by making the eyes look hollow, heavy and downwards, thin fallen cheeks, a close mouth, careless staring hair about the ears. Envy is best expressed by only the hanging of the cheeks and a pale countenance, and sometimes by grinding of the teeth. Let every passion be represented according to its outward appearance in those in whom it reigns.

If you aim at any excellence in this art, you must endeavour to choose out the best actions for every purpose, in restraining the luxurious fancy of nature by a deliberate discretion, by the benefit of which you will furnish your design, always expressing in each member a certain hidden resemblance of the principal motions which affect the eye and soul of the spectator. To express a passion truly, you ought to give every thing its proper motion, or that which best suits your intention, which is nothing else but the agreement of proportion with the action or passion intended, wherein consists the whole life of the art, for hereby an evident difference is made between the living and the dead; the fierce and the gentle; the wise and the simple; the sad and the merry; and in a word, discovers all the several passions and gestures which the body of a man is capable of. But before these things can be exactly done in a picture, you must first intensely consider the life, that you may come as near it as possible, to which adding art, you will meet with no motions so potent, which you will not be able artificially to imitate. These things will be the more exactly accomplished, by viewing and continually practising what we have seen; so as lively to express all gestures, actions, and passions, incident to natural bodies.

EYE, in architecture, is applied to any round window made in a pediment, an attic, the reins of a vault, or the like.

EYE of a dome, an aperture at the top of the dome, as that of the pantheon at Rome, or of St. Paul's at London; it is commonly covered with a lantern.

EYE of the volute, in architecture, the center of the volute, or that point in which the helix or spiral, of which it is formed, commences.

EYE-BROW, in architecture, is used in the same sense as list or fillet.

F.

FABRIC, the structure or construction of any thing, particularly a building, as a house, hall, church, &c.

FACADE, or **FACE**, in architecture, the front of a building, or the side which contains the chief entrance. It is also sometimes used for the side which it presents to the street, garden, court, &c. and sometimes for any side opposite to the eye.

FASCIA, is a term used to express a flat member in the entablatures of columns or elsewhere, resembling a band or broad fillet. Our workmen call it a *face* or *facio*, and it is sometimes written *facia*. The architrave, in the more elegant orders, is composed of three parts, or divided into three bands over one another; these are called the *fasciæ* of the architrave: the Tuscan should have properly one fascia, nor had the Doric originally any more. But the architects have taken the liberty of deviating from exactness in this, as in many other respects. Fascias, in brick buildings, certain juttings out of the bricks over the windows of each story, except the upper one. These are sometimes plain, like those of columns; but sometimes they are moulded; and the moulding is usually a scima reversa at the bottom, above which are two plain courses of bricks, then an astragal, and lastly a boultin. It is the same in stone buildings as it is in brick, and they are also sometimes plain, and sometimes moulded with a scima reversa, or ogee.

FELLING of timber, Many circumstances are well known and constantly observed in the Felling of timber for building, which, though to a hasty observer they may appear trifling, yet prove, on experience, to be of the utmost consequence. One thing observed by M. de Buffon, which greatly increases the solidity and strength of timber, is, that the trees intended to be felled for service should be first stripped round of their bark, and suffered so to stand and die upon the spot before cutting. The sappy part, or blea of the oak, becomes by this means as hard and firm as the heart, and real strength and density of the wood has been proved, by many experiments, to be greatly increased by it, nor is this a practice of any detriment to the proprietor, since the remaining stumps of these trees send up their young shoots as vigorously as if they had been cut down in their natural condition. When any tree is to be cut down for timber, the first thing to be taken care of is a skilful disbranching such limbs as may endanger it in its fall; many trees are utterly spoiled for want of a previous care of this kind. In arms of timber that are very neat, it is always necessary to chop or sink in them close to the bole, and then, meet-
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ing it with downright strokes, it will be severed from the tree without splitting. In felling the tree, take care always to cut as close to the ground as possible, unless it is intended to be grubbed up; and the doing this is of advantage both to the timber and the wood; for timber is never so much valued, if it be known to grow out of old stocks. A more enlarged account will be given under the article timber.

FENCE, a hedge, wall, ditch, bank, or other enclosure, made round gardens, fields, woods, &c. In hotter climates than England, where they have not occasion for walls to ripen their fruit, their gardens lie open, where they can have a water-fence, and prospects; or else they bound their gardens with groves, in which are fountains, walks, &c. which are much more pleasing to the sight than a dead wall; but in colder countries, and in England, we are obliged to have walls to shelter and ripen our fruit, although they take away much from the pleasant prospect of the garden. Since therefore we are under the necessity to have walls to secure our gardens from the injuries of winds, as well as for the convenience of partitions or enclosures, and also to ripen our fruit, brick walls are accounted the best and warmest for fruit; and these walls, being built panel wise, with pillars at equal distances, will save a great deal of charge, in that the walls may be built thinner than if they were built plain, without these panels; for then it would be necessary to build them thicker every where; and, besides, the panels make the walls look the handsomer.

Stone walls are to be preferred to those of brick, especially those of square hewn stones. Those that are made of rough stones, though they are very dry and warm, yet, by reason of their unevenness, are inconvenient to nail up trees to, except pieces of timber be laid in them here and there for that purpose. But in large gardens it is better to have the prospect open to the pleasure-garden, which should be surrounded with a fosse, that from the garden the adjacent country may be viewed; but this must depend on the situation of the place; for, if the prospect from the garden is not good, it had better be shut out from the sight by a wall or any other Fence, than to be open. As also, when a garden lies near a populous town, and the adjoining grounds are open to the inhabitants; if the garden is open there will be no walking there in good weather, without being exposed to the views of all passengers, which is very disagreeable. Where the fosses are made round a garden which is situated in a park, they are extremely proper; because hereby the prospects of the park will be obtained in the garden, which renders those gardens much more agreeable than those which are confined.

In such places where there are no good prospects to be obtained from a garden, it is common to make the enclosure of park paling, which, if well performed, will last many years, and has a much better appearance than

than a wall; and this pale may be hid from the sight within by plantations of shrubs and ever-greens; or there may be a quick hedge planted within the pale, which may be trained up, so as to be an excellent Fence by the time the pales begin to decay. There are some persons who make stuckade Fences round their gardens to keep out cattle, &c. which, when well made, will answer the purpose of Fences; but this being very expensive in the making, and not of very long duration, has occasioned their not being more commonly in use.

As to Fences round parks, they are generally of paleing; which, if well made of winter-fallen oak, will last many years. The Fence may be six feet and a half high, which is enough for a fallow deer; but, where there are red deer, the Fence should be one foot higher, otherwise they will leap over. Some inclose their parks with brick walls; and in countries where stone is cheap, the walls are built with this material; some with, and others without mortar. The height of garden-walls should be twelve feet, which is a moderate proportion, and, if the soil be good, it may in time be well furnished with bearing wood in every part, especially with that part planted with pears, notwithstanding the branches being trained horizontally from the bottom of the walls.

FESTOON, an ornament of carved work, representing a wreath, or garland of flowers or leaves, or both together, twisted or interwoven one with another; the Festoon is naturally thickest in the middle, small at each end, and tied up there, whence a part commonly hangs down beyond the knot. The ancient use of the Festoon was to hang upon the gates of temples at festivals, and it consisted of flowers, or fruits, and their leaves only; but we have, of later time, deviated so far from truth and nature, that we have twisted instruments of music, war, and emblems of the arts and professions of all kinds into this form. The ancients would have exclaimed at a garland of drums and fiddles, or a wreath of cannons and battle-axes, but we overlook these absurdities. The word is French, but it is derived from the Latin *festum*, feast or festivity. Festoons are hung upon arches, and in the freeze of entablatures, some times also about vases, and other ornaments.

FIGURE, in architecture, signifies the representations of things made in solid matter, as statues, &c. In painting and designing, it is the lines and colours that form the representation of a man, or other animal.

FILLET, in architecture, a little square member or moulding, used in divers places and on divers occasions; but generally as a crowning over a greater moulding. It is called *lista* or *listella* by the Italians; by the French *reglet*, and by others *band* and *bandelette*. In painting, gilding, &c. it is a little rule, or reglet of leaf-gold drawn over some mouldings, or on the edges of frames, pannels, &c. especially when painted white by way of enrichment.

FINISHING, with architects, is frequently used of a crowning, acroter, &c. raised over a piece of building, to terminate and finish, or complete it.

FIRE-STONE, a sort of stone called also Rygate stone, of the name of the place from whence it is chiefly brought, being very good for fire-hearths, ovens, stoves, &c.

FLEMISH BRICKS, a neat, strong, yellow kind of bricks, brought from Flanders, and commonly used in paving yards, stables, &c. being preferable for such purposes to the common bricks. These bricks are six inches and a quarter in length, two and a half in breadth, and one and a quarter thick. Now allowing one fourth of an inch for the joint, seventy-two of them will pave a yard square; but if they be set edgewise, then a yard square will require one hundred.

FLOOR, in architecture, is the under side of the room, or that part whereon we walk. Floors are of several sorts, some of earth, some of brick, some of stone, and some of wood. Carpenters by the word Floor, understand as well the framed work of timber, as the boarding over it. Earthen Floors are commonly made of loam, and sometimes (for Floors to make malt on) of lime and brook sand, and gun-dust, or anvil-dust from the forge.

FLOORING, a rural sort of work, by which, in this place, are not meant floors laid with boards or planks, but such as are used in plain country habitations, and the manner of making them.

Take two thirds of lime, and one of coal-ashes well sifted, with a small quantity of loamy clay; mix the whole that you intend to use together, and temper it well with water, making it up into a heap, let it lie a week or ten days, in which time it will mellow and digest; then temper it well over again, and be sure that your quantity of water does not exceed, but rather that it may obtain a mellow softness and toughness from labour: then heap it up again for three or four days, and repeat the tempering very high, till it becomes smooth and yielding, tough and glewy. Then the ground being levelled, lay your floor therewith about two and a half, or three inches thick, making it smooth with a trowel: the hotter the season is, the better; and when it is thoroughly dried, it will continue time out of mind. This makes the best floors for houses, especially for malt houses; but as for those who cannot get these materials, or go to the charge of them, they may make of clayey loam and new soft horse-dung one third, with a small quantity of coal ashes, if they can be had; and temper these after the afore-mentioned manner, and lay the floor with the stuff, three or four inches thick, smooth and even, which will cement, become hard, strong, and durable, being done in a hot and dry season, good for cottages, barns, and other small houses.

But if any would have more beautiful floors than these, they must lay their floors even, smooth, and fine, either with the first or last mentioned Flooring; then take lime made of rag stones, and temper it with a little whites of eggs, the more eggs the better, to a very high pitch, with which cover your floor about a quarter or half an inch thick, before the under Flooring be too dry, that they may well incorporate together; this being well done, and thoroughly dry, if sometimes rubbed over with mops or cloths, with a little oil thereon, it will look very beautiful and transparent, as if it were polished metal or glass, provided the eggs and lime were thoroughly tempered, and otherwise well performed.

Sir Hugh Plat gives a receipt for making an artificial composition wherewith to make smooth, glittering, and hard floors, and which may also serve for plaistering of walls. Ox blood and fine clay tempered together, he says, makes the finest floor in the world; and that this mixture, laid in any floor or wall, will become a very strong and binding substance.

Concerning boarded floors, it is to be observed, that the carpenters never floor their rooms with boards, till the carcase of the house is set up, and also is enclosed with walls, lest the weather should wrong the Flooring; yet they generally rough plane the boards for Flooring, before they begin any thing else about the building, that they may set them by to season, which is done as follows; they lean them one by one on end-end assant, with the edge of the board against a balk somewhat higher than half the length of the board, and then they set up another board in the same posture on the other side of the balk, so that the boards cross one another, above the balk; then on the first side they set another board in the same posture, and on the second side another, and so proceeding alternately, till the whole number of boards is thus set on end. The boards being set up in this posture, there is left a space of the thickness of a board all the length of the boards, but just where they cross one another, for the air to pass through to dry and shrink them; but they are set under some covered shed, that neither the rain nor sun may come at them; for if they should be wetted with rain, that would swell them instead of shrinking them; and if the sun should shine very hot upon them, it would dry them so fast, that they will split or crack, which is what they call tearing or shaking.

There is another way of drying and seasoning boards for floors, viz. by laying them flat upon three or four balks, each board about the breadth of a board asunder, the whole length of the balks; then they lay another lay of boards athwart the last, and so till they have laid them all after this manner; so that in this position they also lie hollow, for the air to play between them.

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Of measuring floors : boarded floors are usually measured by the square (of one hundred superficial feet) by multiplying the length of the room in feet by the breadth in feet, and the product is the content in feet ; then the chimney-ways and well-holes for stairs are measured by themselves, and their content in feet is deducted from the whole content ; and afterwards cut off two figures from the remainder on the right hand, and what remains on the left hand is squares, and what are cut off are odd feet of the content of the Flooring in that room.

FLUTINGS, in architecture, are hollows or channellings, which are carried perpendicularly up columns by way of ornament. They are cut lengthwise all round the shaft of the column, and are usually rounded at the ends. Vitruvius says, they were first intended to represent the folding of a garment. The Flutings of columns properly differ according to the several orders : in the Doric they should be twenty to each column ; in the Ionic twenty-four, and so on ; but the present architects do not very strictly adhere to these rules. The Flutings of columns are sometimes left open, and sometimes there is carried up a rounded body like a rope, plain or twisted all along their middle. They are, in this condition, said by some to be cabled, and the columns are called cable-fluted columns. Between the flutes are little spaces that separate them, which Vitruvius calls *stria*, and we list : though, in the Doric, the flutes are frequently made to join one another, without any intermediate space at all ; the list being sharpened off to a thin edge, which forms a part of each flute. Sometimes the Flutings are made flat, and are called *facettes* ; but these have never such a good effect as the others. Vitruvius says, that when there are Flutings in the column, there ought also to be eggs and anchors in the quarter-round of the capital, and even pearls and olives, in a *baguette*, to be made underneath, instead of annulets. These eggs and olives ought to be made of the same number with the Flutings, and to be regularly distributed.

FLYERS, in architecture, such stairs as go straight, and do not wind round ; nor have the steps made tapering, but the fore and back part of each stair, and the ends, respectively, parallel to one another ; so that if one flight do not carry you to your intended height, there is a broad half space, from whence you begin to fly again, with steps every where of the same length and breadth as before.

FOLIAGE, a cluster or assemblage of flowers, leaves, branches, &c. Foliage is particularly used for the representations of such flowers, leaves, branches, rinds, &c. whether natural or artificial, used as enrichments on capitals, freezes, pediments, &c.

FOT-PACE, or HALF-PACE, is a part of a pair of stairs, whereon, after four or six steps, you arrive at a broad place, where you may take
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two or three paces before you ascend another step, by that means to ease the legs in ascending the rest of the steps.

FORGE, a little furnace, wherein smiths, and other artificers of iron or steel, &c. heat their metals red hot, in order to soften and render them more malleable and manageable on the anvil. Forge is also used for a large furnace, wherein iron ore, taken out of the mine, is melted down; or it is more properly applied to another kind of furnace, and then cast into sows and pigs, is heated and fused over again, and beaten afterwards with large hammers, and thus rendered more soft, pure, ductile, and fit for use. Of these there are two kinds: the first is called the finery, where the pigs are worked into gross iron, and prepared for the second, which is called the chafery, where it is further wrought into bars fit for use.

FORGING, in smithery, the beating or hammering iron on the anvil, after having first made it red hot in the forge, in order to extend it in various forms, and fashion it into works. There are two ways of Forging and hammering iron; one is by the force of the hand, in which there are usually several persons employed, one of them turning the iron and hammering likewise, and the rest only hammering. The other way is by the force of a water-mill, which raises and works several large hammers beyond the force of men, under the strokes of which the workmen present large lumps, or pieces of iron, which are sustained at one end by the anvils, and at the other with iron chains fastened to the ceiling or the forge. This last way of Forging is only used in the largest works, as anchors for ships, &c. which usually weigh several thousand pounds. For lighter works, a single man serves to hold, heat, and turn with one hand, while he hammers with the other.

FOUNDATION, in architecture, is that part of a building which is under ground, or the mass of stone, brick, &c. which supports a building, or upon which the walls of a superstructure are raised, or it is the coffer or bed dug below the level of the ground, to raise a building upon; in which sense, the foundation either goes to the whole area or extent of the building; as when there are to be vaults, cellars, or the like; or it is drawn in cuts or trenches, as when only walls are to be raised. Sometimes the Foundation is massive, and continued under the whole building, as in the antique arches and aqueducts, and some amphitheatres; but it is more usually in spaces or intervals, either to avoid expence, or because the vacuities are at too great a distance, in which latter case, they make use of insulated pillars, bound together by arches.

There are several things to be well considered, in laying the foundation of a building, the most material of which are here extracted from the best architects ancient and modern. That we may found our habitation.

tion firmly, requires the exactest care; for, says Sir Henry Wooton, “ if the foundation dance, ’twill marr all the mirth in the house. Therefore, says that excellent architect, we must first examine the bed of earth upon which we are to build, and then the under fillings or substruction as the ancients call it. For the former, we have a general precept in Vitruvius, twice repeated by him as a point indeed of main consequence; *Substructionis fundationes fodiantur sequeant inveniri ad solidum et in solido*. By which he recommends not only a diligent, but even jealous examination what the soil will bear; advising us not to rest upon any appearing solidity, unless the whole mould through which we cut have likewise been solid. But he has no where determined how far we should go in this search, as perhaps depending more upon discretion than regularity, according to the weight of the work.

Palladio has ventured to reduce it to a rule; and allows a sixth part of the height of the whole building for the hollowing or under-digging, unless there be cellars under-ground; in which case he would have it sometimes lower. See Sir Henry Wooton’s *Elements of Architecture*. Palladio also lays down several rules to know if the earth be firm enough for the foundation, by observations from the digging of wells, cisterns, and the like, and from herbs growing there, if there be such as usually spring up in firm ground; also if a great weight be thrown on the ground, it neither sounds nor shakes; or if a drum being set on the ground, or lightly touched, it does not resound again, nor shake the water in a vessel set near it. These, says he, are signs of firm ground. But the best way to discover the nature of the soil, is to try it with an iron crow, or with a borer, such as is used by well-diggers. Architects ought to use the utmost diligence in this point, for, of all the errors that may happen in building, those are the most pernicious, which are committed in the foundation; because they bring with them the ruin of the whole building; nor can they be amended without very great difficulty.

Foundations are either natural or artificial; natural, as when we build on a rock, or very solid earth; in which case, we need not seek for any further strengthening: for these without digging, or other artificial helps, are of themselves excellent foundations, and most fit to uphold the greatest buildings. But if the ground be sandy or marshy, or have lately been dug, in such case, recourse must be had to art. In the former case, the architect must adjust the depth of the foundation by the height, weight, &c. of the building; a sixth part of the whole height is looked upon as a medium; and as to thickness, double that of the width of a wall is a good rule. If you build upon mossy and loose earth, then you must dig till you find sound ground. This sound ground, fit to uphold a building, is of divers kinds; as Alberti well observes, is in some places so hard, as scarcely to be cut with iron, in other places very stiff, in other places

places blackish, which is accounted the weakest, in others like chalk, and in others sandy; but of all these, that is the best that requires most labour in cutting or digging, and when wet, does not dissolve into dirt.

If the earth to be built on is very soft, as in moorish grounds, or such that the natural Foundation cannot be trusted, then you must get good pieces of oak, whose length must be the breadth of the trench, or about two foot longer than the breadth of the wall; these must be laid across the Foundation, about two feet asunder, and being well rammed down, lay long planks upon them, which planks need not lie so broad as the pieces are long; but only about four inches of a side wider than the basis or foot of the wall is to be, and pinned or spiked down to the pieces of oak on which they lie. But if the ground be so very bad, that this will not do, then you must provide good piles of oak of such a length as will reach the good ground, and whose diameter must be about one-twelfth part of their length. These piles must be forced or drove down with a commander, or a machine or engine for that purpose, and must be placed as close as one can stand by another; then lay planks upon them, and spike or pin them down fast. But if the ground be faulty, only here and there a place, and the rest of the ground be good, you may turn arches over these loose places, which will discharge them of the weight. You must not forget to place the piles not only under the outer walls, but also under the inner walls that divide the building, for if these should sink, it would be the means to make the outer wall crack, and so ruin the whole building.

Having thus far considered the bed of earth on which the building is to be erected, we shall next consider the substruction, as it was called by the ancients, but the moderns generally call it the Foundation. This is the ground work of the whole edifice, which must sustain the walls, and is a kind of artificial, as the other was natural; as to which, these things that follow are most necessary to be observed. 1. That the bottom may be exactly level; therefore lay a platform of good boards. 2. That the lowest edge or row be all of stone, the broader the better, laid closely without mortar, which is a general caution for all parts of a building that are contiguous to board or timber; because lime and wood are utter enemies to one another; and if unfit confiners any where, then they are more especially so in the Foundation. 3. That the breadth of the substruction be at least double the breadth of the wall that is to be raised upon it. But even in this case, art ought to give way to discretion; and the substruction may be made either broader or narrower, according as the goodness of the ground, and the ponderosity of the edifice requires. 4. That the Foundation be made to diminish as it rises, but yet so, that there may be as much left on the one side as on the other; so that the middle of that above may be perpendicularly over the middle of that

that below, which ought in like manner to be observed in diminishing the walls above ground; for by this means, the building will become much stronger than it would be, if the diminution were made any other way. 5. That you ought never to build upon the ruins of an old Foundation, unless you are well assured of its depth, and that its strength is sufficient to bear the building.

Lastly, there is a curious precept in the writings of some ancient architects, that the stones in the Foundation should be laid as they naturally lay in the quarry; they supposing them to have more strength in their natural position. This precept is generally observed by all good modern artists, not only in the Foundation, but also in all the parts of the superstructure; and for a better reason than that of bare conjecture, viz. because they find the stones to have a cleaving grain, or that they are subject to cleave that way of the stone that lay horizontally in the quarry; and for that reason, if the horizontal position of the stones in the quarry should be placed vertically in the building, the super-incumbent weight would be apt to cleave them, and so render the building ruinous. For, as it has been observed by Philip de Orme, the breaking or yielding of a stone in the Foundation, although it should be but the breadth of the back of a knife, it will make a cleft of more than half a foot in the fabric aloft. In some places they found the piers of bridges, and other buildings near the water, on sacks of wool laid like mattresses, which being well pressed and greased, will never give way nor rot in the water.

Of all the ancients, says M. Gautier, in architecture, who have left us any rules for the founding on bridges, Scamozzi is the only one that has said any thing to the purpose. He tells us, that the Foundations are laid after different manners. The first is by enclosing all round the space of ground you would build upon, by dams made with piles set deep in the ground in double rows, well strengthened and bound together with cross pieces and cords, and filling the vacant spaces between them with chalk, or other earthly matter. This being done, the water must be emptied out, and the Foundation dug according to the quality of the ground, driving down piles, if it be necessary, upon which the walls of the Foundation must be laid. But this method is only practicable in building, on such rivers where the water is neither very rapid, nor very deep. The second is done by laying the Foundation on grate-work, rafts of stout oak well bound together, and made fast at the surface of the water with cables or machines, and building upon them large quarters of stone cramped together, and joined with good mortar or cement, and afterwards letting them descend softly by those cables and machines perpendicularly to the bottom of the water, as he says was done in the time of the emperor Claudius, at the port of Ostia; and as Draguet Reys did in the last century at Constantinople, in the fine mosque that he built upon

upon the sea. This manner requires a good bottom, equal and very even. The third is by drawing off all or greatest part of the water of the river into some other place, or by digging it another bed, or letting it out into deep ditches, in which, says he, great diligence must be used, to have all the materials ready, and to have workmen enough ready, sufficient to compleat it in a short time, to the end that the masonry may be well confirmed and settled before there is a necessity to let the river into its former bed.

The last method, which is that which Scamozzi says he believes Trajan made use of in building a bridge over the Danube, is to dig a new bed for the river, in a place which seems, as it were, to meet itself, after having made a great elbow or compass about, which being done, the bridge may be built with ease, and that dry shod, in that place. And when the bridge has been settled, to open the passage of the current at the two ends, stopping the bed up with strong banks or moles, and so the river will take to its old course again; this says he, is the surest method of all.

To lay the Foundation of the piers of a bridge, if the earth be soft, it must be piled, after as much of it has been carried away as can well be. The same is to be done, if it be sand or gravel, which must be dug out as deep as can be, all round about, to a reasonable distance, which must be surrounded with pointed piles or stakes well fastened to one another, filling the spaces between pile and pile with chalk or solid earth well rammed in, which will for a time hinder the current from washing away the piles and sand, and ruining the work. The piles ought to be made tapering from top to bottom; the arches unequal in number, and carried up higher than the highest inundation. The architecture of bridges ought to be plain and rustic. Scamozzi afterwards gives the design of his fine bridge of stone, and another of carpentry. The profile of this last may be seen in La Hire's Treatise of Carpentry.

M. Blondel relates the method he made use of in laying the Foundation of the bridge of the Haintes, which he caused to be built over the Charente. The ancient bridge had been borne down, it having been built on potters earth or clay, and piled, so that the swelling of the Foundation had raised the piles, and threw down the bridge. The piles, by the swelling of the clay, started out above a foot higher than the level of the rest. The plummets went into this clay, to the depth of sixty feet, made with a large borer, the arms of which were of iron, each three feet in length, and well jointed one into another with good pins. After they had caused it to be dug seven feet below the bottom of the water, all the work being counterguarded and encompassed with a good dam, and the hollowness raked level, then a grate-work of good oaken wood was laid all over the Foundation, of twelve or fourteen inches in thick-

ness, and square the whole length and breadth of the building, not only that part that was piled, but also the opening or space between the piers and abutments of the bridge, or the void spaces of the arches. The chambers of the grille, or grate-work, filled with good quarters of hewn stone, and the upper part covered with planks of five or six inches thick, well fastened on with pins all over the grate-work. Afterwards upon this work of carpentry is laid a Foundation of masonry five feet thick, all level with good hewn stones, well fastened together with cramp-irons. Upon this flat Foundation of five feet thick, the piers are erected, which for the first year are brought no higher than the imposts, to the end that they may settle well during the winter.

M. Blondel makes it appear, that whatever precautions architects take to secure their works by good Foundations, yet they are very conjectural and uncertain. He in this compares an architect to a physician, who proceeds only upon conjectures. For who can venture to say, says he, that building upon a Foundation of consistence as it appears to him to be, that he shall not meet with soft or bad ground underneath, which the weight of the building will press down and sink into, and by that means be overturned. Upon this occasion, says M. Gautier, I can give an example that happened in one of the isles of Oleron or Rhe, where the king causing fortifications to be built, one face of the wall sunk, or fell down, notwithstanding it was built on a bank of rock; because it had a hollow underneath, which could not be, or was not discovered. Blondel also relates in confirmation of what he has said, that the vast walls of the church of Val de Grace, sunk on one side, though built upon a good foundation; because there were underneath large hollows which had been made in former times for taking out of stones some fathoms lower, there having been a quarry there.

Michael Ange Bonarote caused the foundation of the dome of St. Peter's, Rome, to be laid with all the precautions imaginable. But for all that, this work did gape or split, which they cured by binding it about with a hoop of iron of an extraordinary breadth and thickness, which cost 100,000 crowns. It is supposed, that this fracture in the dome is an effect of the waters of a subterraneous source, from a spring which runs down from the high mountains of the Vatican and Janiculus, which have washed the Foundations of this huge edifice. So that, according to these examples, no body can be answerable for the Foundations of a building.

The Corderie of Rochefort, the designs of M. Blondel, is in length two hundred and sixteen toises, not comprising the pavillions that are at the two ends, and four toises, the breadth between the walls, the two stories, built upon a grillage, or grate-work, as well in the full, as in the void of ten or twelve inches thick, laid upon a bottom of potters clay.

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Upon this grillage are laid platforms well fastened together with pins, and upon them a couch, or course of hewn stones, and good rough stones, the building being raised every where level continually, that it may be every where equal, that there may be no more weight on the one side than the other, that all the parts of the work may be *in æquilibrio*. This building thus raised, has succeeded perfectly well. M. Blondel remarks further, that the materials at Paris not being of the same solidity as those of Italy, as perhaps marble, and harder, will not permit to make bridges at Paris with so much delicacy and so disengaged, as those which are made in Italy; which have a great deal less thickness at the place of the keys of the arcades.

FRAME, among painters a kind of square, consisting of four long slips of wood joined together, whose intermediate space is divided by threads, into several little squares like a net. It serves to reduce figures from great to small; or, on the contrary, to augment their size from small to great.

FRAMING of an House, among carpenters, denotes all the timber work therein; namely, the carcase, flooring, partitioning, roofing, cieling, beams, asherling, &c. all together.

FRENCH ORDER, an Order, as we are content to call it, in which the proportions are the same as in the Corinthian, but the capital is decorated with cocks heads and flower-de-luces. There are some columns of it in the grand gallery at Versailles, but such a variation from the antique does not deserve the name of a distinct Order.

Fresco, a method of painting, or rather plaistering on walls to endure the weather, and representing birds, beasts, herbs, fruits, &c. in relief. It is performed on fresh plaister, or on a wall laid with mortar not yet dry, and with water-colours. This sort of painting has a great advantage, by its incorporating with the mortar and drying along with it, it is rendered extremely durable, and never fails or falls but along with it.

Of the method of this painting: to make the compost or plaister of old rubbish stones, and mix it with well-burnt flint (or lime) and water; but wash out the saltiness of the lime, by often pouring the water, and putting fresh to it. This should not be done in moist weather, because that has a great influence on the walls. And in order to render the plaister the more durable, they strike into the joints of the brick or stone-wall stumps of horse-nails, at about six inches distance, to prevent the plaister from peeling off. With this plaister the wall is first to be plaistered a good thickness, and left for some time dry; and the designs and colours being first ready prepared. This painting is chiefly performed on walls and vaults newly plaistered with lime and sand; but the plaistering is only to be laid in proportion as the painting goes on, no more being to be done at once than the painter can dispatch in a day, while it is dry. Before the painting is begun, there is usually a cartoon or design made on paper,

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to be calked and transferred to the wall, about half an hour after the plaister has been laid on. The colour being prepared and mingled, the wall is to be plaistered over again a second time about the thickness of a half-crown, but only so much as you intend presently to work upon; and while it is wet, you must work the colours therein, which will mix and incorporate with the plaister, so as never to wash out. The painting must be, for the work to come out in all its beauty, wrought quick, and with a free hand: for there can be no alteration after the first painting, and therefore make your colour high enough at first; you may deepen, but not easily heighten. Nor must they ever be retouched dry, with colours mixed up with the white of an egg, or size, or gum, as some workmen do, by reason such colours grow blackish; nor do any preserve themselves, but such as were laid on hastily at first.

In this painting all the compound artificial colours, and almost all the minerals are set aside, and scarce any thing used but earths; which are capable of preserving their colour, defending it from the burning of the lime, and resisting its salt, which Vitruvius calls its bitterness. The colours used are white made of lime slacked long ago, and white marble dust; oker, both red and yellow, violet red, verditer, lapis lazuli, smalt, earth, black Spanish brown, Spanish white, &c. All which are only ground and worked up with water; and most of them grow brighter and brighter as the Fresco dries.

The ancients painted on stucco; and it is worthy observation in Vitruvius, what infinite care they took in making the incrustation or plaistering of their buildings, to render them beautiful and lasting: though the modern painters find a plaister made of lime and sand preferable to stucco, both because it does not dry too hastily, and as being a little brownish, it is fitter to lay colours on, than a ground so white as stucco. This kind of painting was the ancient Grecian way of painting, and since much used by the Romans. Plutarch informs us, that Aratas, the chief commander under Ptolemy king of Egypt (in a compliment to the emperor's affections that way) forbore to sack a wealthy city, merely for the excellency of the Fresco painting upon the walls of the houses. There have been several whole towns of this work in Germany, excellently well done, but now ruined by wars. At Rome there are three chambers (in the pope's palace) of Fresco, done by Raphael Urbin, and Julio Romano, his disciple, who finished his master's work, which is yet called Raphael's design. There are other places done by Andrea del Sexto and Michael Angelo, and some other artists. There is an excellent Fresco work at Fountainbleau in France. It is the continued travels of Ulysses, in sixty pieces, done by Bollmneo Martin Rouse, a Florentine, and others.

FRET, or FRETTE, in architecture, is a kind of knot or ornament, consisting of two lists or small fillets variously interlaced or interwove,

and running at parallel distances equal to their breadth. Every return and intersection of these Frets must be at right angles. This is so indispensably necessary, that they have no beauty without it, but become perfectly Gothic. Sometimes the Frette consists but of a single fillet, which however may be so ordered, as to fill its space exceedingly well, if well managed. These Frets were very much in use among the ancients, who applied them chiefly on even flat members, or parts of buildings; as the faces of the corona, and eaves of cornices; under the roofs, soffits, &c. on the plinths of bases, &c. The name of Frette was hence occasioned, the Frette literally signifies the timber-work of a roof; which consists chiefly of beams, rafters; &c. laid across each other, and, as it were, fretted.

FRET-WORK, an enrichment of frette, or a place adorned with something in the manner thereof. Fret-work is sometimes used for the filling up and enriching flat empty spaces, but it is principally practised in roofs which are fretted over with plaister-work. The Italians also use Fret-work in the mantlings of chimnies with great figures, a cheap piece of magnificence, and as durable almost within doors, as harder matters in the weather.

FRIEZE, in architecture, a member in the entablature of columns; it is the middle part, and separates the architrave and cornice. The Frieze is flat in all the orders; but in most of them is intended to receive ornament. In the Tuscan it should remain plain; in the Doric it is essentially divided into two parts, under the names of triglyphs and metopes; the triglyphs are channelled figures, and the metopes are the spaces between them; these triglyphs are not capable of alteration, but the ornaments in the metopes are varied at pleasure, and frequently they are left plain. In the Ionic the Frieze is sometimes made to swell, which is an objection to the general rule of their being flat, but this is an innovation: in the Corinthian and Composite the Frieze is decorated variously at the pleasure of the architect, with figures of any kind, and is often a very elegant part of the order. The Friezes of the Corinthian order, at Palmyra are very richly decorated. In our common door-ways for persons of business, where there is an attempt towards any orders the Frieze is the part which receives the name, or other inscription. In the Corinthian and Composite orders the Frieze is often joined to the architrave by sweep: the height of the Frieze is in general three-fourths of that of the architrave, but not strictly or exactly. When it swells, as in the Ionic order, it is called a pulvinated or cushioned Frieze. Some write the word Freeze, or Frieze, and others Phrize; this last spelling brings it nearer what is pretended by many to be its origin, the word *Phrygio*, an embroiderer; the ornaments of Friezes, in the richer orders, representing embroidery.

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When the Frieze is decorated with sculptures, it is frequently named according to their nature; thus historical Friezes are those representing histories by figures, marine Friezes are those with shells, tridents, and sea-horses, and so of the others: but the most frequent in ancient buildings are those on which religious ceremonies, the instruments of sacrifice, and other such matters are figured. We see instances very common in small buildings, in which the architect has taken the liberty to retrench the Frieze entirely, and to make the cornice rest upon the architrave; but this always offends the eye, and is extremely wrong. The Frieze is introduced into an entablature to shew a natural space, and the thing which represents it cannot be suppressed without impropriety.

FRONT, in perspective, a projection or representation of the face or forepart of an object, or of that part directly opposite to the eye.

FRONTAL, in architecture, a little fronton, or pediment, sometimes placed over a little door or window.

FRONTISPIECE, in architecture, the word is sometimes used to express the whole decoration of the front of a church; sometimes for a particular compartment raised over gateways, and in other places, supported and encompassed with figures, or other ornaments, and intended to hold an emblem, a coat of arms, or inscription.

FRONTON, this term is used by those who follow the French authors for what we call a pediment. An ornament that crowns the frontispieces of buildings, and is used over doors and windows. It is properly of a triangular form, and not very high in proportion to the extent of its base, but the architects have deviated from this, and made it arched, and often broken, to admit busts or figures.

FROWEY. Workmen say timber is Frowey, when it is evenly tempered all the way, and works freely without tearing.

FUNNELS of *Chimnies*. The Funnel is the shaft, or smallest part from the waste, where it is gathered into its least dimensions. Palladio directs, that the Funnels of chimnies be carried through the roof, three, four, or five feet at least, that they may carry the smoke clear from the house into the air. He advises also, that care be taken as to the width of them; for that if they be too wide, the wind will drive back the smoke into the room; and if they be too narrow, the smoke will not be able to make its way. Therefore chamber chimnies must not be made narrower than ten or eleven inches, nor broader than fifteen; which is the ordinary depth of the Funnels of great kitchen chimnies, whose breadth is four or five feet within the work, from the place where the breast ends, to the top of the Funnel. Now the said breast reaches from the mantle-tree to the ceiling or pitch of the arch, always diminishing within the work, till you come to the measures of depth and breadth before-mentioned; and from thence to the end of the Funnel, it must be carried up

as even as it possibly can be; for if there be a failure in this, the smoke happens to be offensive.

FURRING, in architecture, is the making good the rafters feet in the cornice. Thus, when rafters are cut with a knee, these Furrings are pieces which go straight along with the rafter, from the top of the knee to the cornice. Also when rafters are rotten, or sunk hollow in the middle, there are pieces cut thickest in the middle, and tapering towards each end, which are nailed upon them to make them straight. Such pieces are called Furs, and the putting them on, Furring the rafters.

FUSAROLE, in architecture, is a moulding or ornament placed immediately under the echinus in the Doric, Ionic, and Composite capitals. The Fusarole is a round member carved in manner of a collar or chaplet with oval heads. The Fusarole should always answer exactly under the eye of the volute in the Ionic capital.

FUST, in architecture, is the shaft of a column, and that part which is contained between the base and the capital, and may be called the trunk or body of the column. This part is commonly plain, sometimes fluted; and the flutings are sometimes empty, sometimes filled up at the bottom, with a straight, round or twisted piece, which is called a cable. Sometimes also the Fust is ornamented with rustic, or otherwise. The word is French, and literally signifies a cask. But some derive it from the Latin *fustis*, a club.

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GABLE-END *of a House*, is the upright triangular end from the cornice or eaves, to the top of its roof.

GAIN, the levelling shoulder of the joists, or other stuff. It is also used for the lapping of the end of the joists, &c. upon a trimmer or girder; and then the thickness of the shoulder is cut into the trimmer, also levelling upwards, that it may just receive the Gain, and so the joist and trimmer lie even and level with their surface. This way of working is used in floors and hearths.

GALLERY, in architecture, is a covered place in a house, much longer than broad, and usually in the wings of a building; its use being chiefly to walk in. It is also a little isle or walk, serving as a common passage to several rooms, placed in a line or row. Their length, according to Palladio, ought to be at least five times their breadth. They may be six, seven, or eight times their breadth, but must not exceed.

GATE, in architecture, a large door giving entrance into a city, town, castle, palace, or other considerable building: or a place giving passage where persons, horses, coaches, or waggons are to pass, &c. As to their proportion

portion, the principal Gates for entrance through which coaches and waggons are to pass, ought never to be less than seven feet in breadth, nor more than twelve, which last dimension is fit only for large buildings. The height of a Gate is to be one and a half of the breadth, and somewhat more; but as for the common Gates in inns, under which waggons go loaded with hay, straw, &c. the height of them may be twice their breadth.

GIGANTIC ORDER, a name given by Scammozzi and others to the Tuscan order.

GIRDERS, in architecture, are some of the largest pieces of timber in a floor, the ends of which are usually fastened into summers and breast-somers, and joists are framed in at one end to the Girders. The scantlings and size of Girders and summers, upon the rebuilding of London, after a consultation of experienced workmen, were settled by act of parliament.

GLACIS, in building, &c. is an easy insensible slope or declivity.

GLAZIER, an artificer in the building branch, and whose principal business is in fitting panes of glass to sashes, pictures, &c. and making lead lights for window-frames, cleaning of sash windows, &c.

GLUE, to make the best Glue for gluing the joints of deal-boards. Put half a pound of the best Glue into a quart of water, and boil them gently together over a slow fire, till the Glue be entirely dissolved, and of a due consistence; for if it be too thin, the wood will so drink it up, that there will not remain a body sufficient to bind the parts together: on the contrary, if it be too thick, it will not give way for the joint to shut close enough to be strongly joined; for though it is Glue that makes the joints stick, yet where there is so much of it, that the joint cannot close exactly, it will never hold firm. When Glue is used, it must be made thoroughly hot; for Glue never takes firm hold of the wood, when it is not thoroughly hot. And see that the joints to be glued have not been touched with oil or grease; for if so, the glue will never take fast hold. The joints of the boards being shot true, and the Glue hot, set both the faces of the joint close together, and both turned upwards; then dip a brush in the Glue, and besmear the faces of the joints as quick as possible, and clap the two faces of the joint together, and slide or rub them long-ways one upon another two or three times, to settle them close, and so let them stand till they are dry and firm. The best Glue is that which is the oldest; and the surest way to try its goodness, is to lay a piece to steep three or four days, and if it swell considerably without melting, and when taken out resumes its former driness, it is excellent.

A Glue that will hold against fire or water, may be made thus: mix a handful of quick-lime with four ounces of linseed oil; boil them to a good thickness, then spread it on tin-plates in the shade, and it will become

come exceeding hard, but may be easily dissolved over a fire, as Glue, and will effect the business to admiration.

GLYPH, in sculpture and architecture, any canal or cavity, used as an ornament.

GORGE, in architecture, the narrowest part of the Tuscan and Doric capitals, lying between the astragal, above the shaft of the pillar and the annulets. It is also used for a concave moulding, larger, but not so deep as a scotia, which serves for compartments, &c.

GOthic Architecture, is that which deviates from the proportions, characters, &c. of the antique. It is frequently very solid, heavy and massive; and sometimes, on the contrary, exceedingly light, delicate, and rich. The abundance of little, whimsical, wild, and chimerical ornaments are its most usual characters. The profiles of this are generally very incorrect. Gothic architecture is distinguished into two kinds, ancient and modern. The ancient is that which was brought by the Goths into Germany in the fifth century. The edifices built in this manner were exceeding massive, heavy, and coarse. Those of the modern Gothic run into the other extreme, being light, delicate, and rich to excess. All the ancient cathedrals are of this kind. It is not to be doubted, but that the inventors of the Gothic architecture thought they had far surpassed the Greek architects. A Greek building has not one ornament, but what adds beauty to the whole. No daring out-of-the-way strokes, nothing quaint to impose on the eye. The proportions are so just, that nothing appears very grand of itself, although the whole is striking and noble. On the contrary, in the Gothic architecture, we see large vaults raised on slender pillars, which one would expect every minute to tumble down, though they will stand for many ages. Every thing is crammed with windows, roses, crosses, figures, &c.

GOthic COLUMN, is any round pillar in a Gothic building, either too thick, or too small for its height. There are some of them found twenty diameters in height, without either diminution or swelling.

GOUGE, an instrument or tool used by divers artificers; being a sort of round hollow chisel, for cutting holes, channels, grooves, &c. either in wood or stone.

GRADATION, in architecture, a flight of steps, particularly ascending from the cloister to the choir in churches. Also an artful disposition of several parts, as it were, by steps or degrees after the manner of an amphitheatre; so that those which are placed before do no disservice, but are rather serviceable to those behind. In painting, it is used to signify an insensible change of colour, by the diminution of tints and shades.

GRANARY, a place for laying up or storing corn in, particularly for keeping a considerable time. Sir Henry Wootton advises to make it look towards the north, because that quarter is the coolest and most temperate.

Mr. Worlidge observes, that the best granaries are built of brick, with quarters of timber wrought in the inside, to which the boards may be nailed; with which the inside of the granary must be lined so close to the bricks, that there may not be any room left for vermin to shelter themselves. There may be many stories one above another, which should be near the one to the other; because the shallower the corn lies, it is the better and more easily turned. Some have had two Granaries one above the other, and have filled the upper with wheat, or other corn. The upper one having a small hole in the floor, by which the corn fell down into the lower one, like the sand in an hour-glass, which, when it was all come down into the lower Granary, it was then carried up again into the upper one; and by this means was kept continually in motion, which is a good preservative for the corn. A large Granary full of square wooden pipes may keep corn from heating.

GREEK *Orders*, in architecture, are the Doric, Ionic, and Corinthian; the other two, namely the Tuscan and Composite, being called the Latin orders.

GREEN-HOUSE, a conservatory, or house erected in a garden, for preserving such tender and exotic plants as cannot bear the cold of our winters, if exposed to the open air. These sorts of houses, as they are commonly built, serve more for ornament than use: their situation towards the South, is the only thing that seems to be regarded towards the health of the plants they shelter. It is rare to find one among them that will keep a plant well in the winter, either by reason of their situation in moist places, their want of glasses enough in the front, and the disproportion of the room within them; and sometimes where it happens that a Green-house has been considered in these points, all is confounded by the flues under it, which convey the heat from the stoves. Besides what is commonly called a Green-house, it has been customary to provide glass cases of several kinds, and stoves, for the preservation of plants brought from different countries. But an ingenious author has found them to be so many unnecessary expences; and that a good Green-house, well contrived, will do all that is required for the welfare of any plant in the winter; and that it may be so ordered, as to shelter at one time orange-trees, plants from the Cape of Good Hope, Virginia, Carolina, and indeed such as grow within ten degrees of the line. The same author says, that when he was first acquainted with aloes, Indian figs, and such like plants, he confessed he thought they could never have heat enough, and that he destroyed many by that too common notion; he could hardly venture them out of the hot-beds in the height of summer; and that in the winter they were half roasted with subterraneous fires he made under the glass-cases where they stood.

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A good Green-house ought to be situated on the driest ground to be as free from damp as possible ; great care ought likewise to be taken for keeping out the cold, and yet upon occasion to let in air freely ; but chiefly to contrive that the front of the house be so disposed, that nothing may obstruct the passage of the sun's rays, in the winter, into the house. It is generally allowed that the south aspect is the best for a Green-house, as it will in that exposure receive the sun for the greatest part of the day ; but in case that cannot be had with conveniency, the south-west aspect is next to be chosen ; and it would be pleasant, as well as beneficial to plants, if the conservatory was always joined to the dwelling-house. Nothing can be more agreeable in winter, than to have a view from a parlour or study through ranges of orange-trees, and curious plants of foreign countries, blooming and bearing fruit, when the gardens without doors are, as it were, in a state of death ; and to walk among those curiosities of nature, as in the most temperate climate, without any sense of the frost, or pinching cold that reigns abroad ; and besides, there is this conveniency in joining the conservatory to the house, that in cold weather you may go into it, without letting in the cold air, or blighting from abroad. Thus much as to the situation. The next thing to be considered is the proportion of the building, and that chiefly in relation to the height and breadth of the room ; which a certain author directs, and that for the better admission of the sun's rays to pass all over the house, the breadth of it be no more than the height from the floor to the ceiling, which may be from ten to eighteen feet. That the walls towards the north and east be of a good thickness, and the front towards the south be all of glass, except a low wall about a foot high from the ground ; that there be no piers of brick-work or timber in the glazed part, for they cast more shade into the house, in proportion to their size, than it can receive light through the glass ; whereas, every one who understands exotic plants will allow, that they should have all the advantages of the sun's rays in winter, that they possibly can receive. For this end it would be proper, in the colder parts of England, to build the front of a Green-house in a sweep, or in the form of a semicircle, which would then receive the rays of the sun from the time of its rising, till its setting. Let the glass in the front, whether it be in sashes or casements, be so contrived, that it may either be made to slide quite below or above the frames, or to be taken away, as occasion requires, to give air to the plants, which for about a fortnight or three weeks after they are placed in the house, and as long before the plants come abroad, should be quite open night and day, if the air is not too cold. Some have practised, with good success, to lay the windows of their Green-houses sloping about ten inches ; but others are of opinion they will do as well upright. The door should be in the middle of the front, and at least four foot wide, to admit large plants ;

plants ; that it be glazed, to which strong shutters should be added, at least an inch thick, which during the winter should be shut every night, for fear of frost ; also in severe weather, and when violent winds blow right against the house. That for the better security of the plants from cold, a place for laying up the gardener's tools be built at the Green-house, and over it a fruitery or seed-room, or in room of the latter, the room may be filled with dry straw.

The best pavement for a Green-house is that made with square-tiles, which quickly sucks up wet, and never sweat, as marble, or such kinds of hard stone usually do ; and that for lining of the walls, nothing is preferable to Dutch glazed tiles, which are soon warmed with the sun, and reflect a great heat into the house. That in the disposition of the shelves in the Green-house, one third of the floor be allowed for them to stand upon, one-third from the first shelf to the windows, and as much from the last shelf to the back of the house ; so that a person may walk round the plants, which being placed in the middle line of the house, are safe from the extreme cold, which is generally nearer the walls or glasses. The chimney for warming the air, should be built between the windows and the first shelf at one end of the house, about a foot above the floor, which will rise afterwards, and spread itself over the whole.

But the ingenious Mr. Philip Miller has given us a more accurate design of a Green-house, which he describes as follows.

As to the length of the house, that should be proportioned to the number of plants it is to contain, or the fancy of the owner ; but as to the depth, that should never be more than sixteen feet in the clear, and the length of the windows should be at least equal to the depth of the house ; and if they are sometimes longer, it will still be the better. These windows should be carried up quite to the ceiling, that there be no room for dead air in the upper part of the house ; and they ought to come down within about ten inches or a foot of the floor ; their breadth should be proportioned to the length of the house, which in a small Green-house may be four feet broad, but in a large one they should be six feet. The piers between these windows should be as narrow as possible they may be, to support the building, for which reason he chuses to have them either of stone or solid oak, for if they are built with fine rubbed bricks, they are generally so soft, that the piers will require to be made thicker than can be allowed, otherwise the building will be in danger of falling in a short time, especially if any rooms be built over the Green-house, which would be of great use in keeping out the frosts in hard winters. If the piers are made with stone, he directs that they be twenty inches broad in front, and sloped off backwards to about ten inches broad ; whereby the rays of the sun will not be taken off or obstructed by the corners of the piers : which it would be, if they were square. And if the piers are
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made of solid oak, eighteen inches square he accounts strong enough to hold the building; and also sloped off, as before directed for the stone.

A tool-house may also be erected at the back of the building, which may also serve for many other purposes, and will also be extremely useful, by preventing frost from entering that way, so that the wall between these need not be more than two bricks in thickness; whereas if it were quite exposed, behind it ought to be two bricks and a half, or three bricks in thickness. And thus also, if you have a mind to make a handsome building, and to have a noble room over the green-house, you may make the room to come over the tool-house, and carry up the stair-case in the back, so as not to be seen in the green-house, and by this means you have a room twenty or twenty-two feet in width, and of a proportionable length. And under this stair-case there may be a private door into the green-house, at which the gardner may enter in hard frosty weather, when it will not be safe to open any of the glasses in the front. The floor of the green-house may be laid with marble, stone, or broad tiles, according as the owner pleases, and must be raised two feet above the level of the ground on which the house is situate, which will be sufficient if the soil is dry; but if moist and spongy, and thereby subject to damps, it will be necessary to raise it at least three feet above the surface.

He advises also to make a flue of about ten inches in width, and two feet in depth, under the floor, about two feet from the front, which flue is to be carried the whole length of the house, which may be returned along the back part, and be carried up in proper funnels adjoining to the tool-house, by which the smoak may pass off. He also advises to have good strong shutters to the windows in the front of the green-house, hung on hinges to fold back, so that they may fall back quite close to the piers, so as not to obstruct the rays of the sun. These shutters may be an inch thick, or a little more, made to join so close, as to be able to keep out our common frosts, and when the weather is so intense as to endanger the freezing in the house, it is but making a fire in the flue, and that will prevent it.

The back part of the house should be plaistered with mortar, or white-washed; or if lined with wainscot, should be painted white, as should the cieling, and also every part within side the house, for white reflects the rays of light in a much greater quantity than any other colour; and is of very great service to plants, especially in the winter season, when the house is pretty much closed, so that but a small share of light is admitted through the windows. For he says he has observed, that at such times where a green-house has been painted black, or any dark colour, the plants have cast most of their leaves. He adds, that to avoid the inconvenience which attends the placing of plants of very different natures in the same house, it will be very proper to have two wings added to the

main green-house, which will greatly add to the beauty of the building, and also collect a greater share of heat.

The green-house, according to his plan, is placed exactly fronting the south, and one of the wings faces the south-east, and the other the south-west; so that from the time of the sun's first appearance upon any part of the building, until it goes off at night, it is constantly reflected from one part to the other, and the cold winds are also kept off from the front of the main green-house. And in the area of this place you may so contrive, as to place many of the most tender exotic plants, which will bear to be exposed in the summer season; and in the spring, before the weather will permit you to set out the plants, the beds and borders of this area may be full of anemonies, ranunculus's, early tulips, &c. In the centre of this area may be contrived a small basin for water, which will be very convenient for watering plants, and will also very much add to the beauty of the place; besides, the water being thus situated, will be softened by the heat which will be reflected from the glasses upon it, whereby it will be rendered much better than raw cold water for tender plants.

The two wings of the building should be so contrived, as to be fit for placing plants of different degrees of hardness, which must be effected by the situation and extent of the fire-place, and the manner of conducting the flues. The wing facing the south-east should always be preferred for the warmest stove, its situation being such, as that the sun, upon his first appearance in the morning, shines directly upon the glasses, which is of great service in warming the air of the house, and adding life to the plants, after having being shut up during the long nights in the winter season. These wings may be allowed sixty feet in length, and may be divided in the middle by partitions of glass, with glass doors to pass from one to the other. And the fire-place may be so ordered as to warm both divisions, by placing an iron regulator in the flue, so that smoke may pass through the flues of which part soever you please. By this contrivance you may keep such plants as require the same degree of heat in one part of the house, and those which will thrive in a much less warmth in the other part.

The other wing of the house facing the south-west may also be divided in the same manner, and flues carried through both parts, which may be used according to the seasons, or the particular sorts of plants which are placed therein. So that by this disposition there will be four divisions in the wings, each of which may be kept up to a different degree of heat, which, together with the green-house, will be sufficient to entertain plants from all quarters of the world. And without having these several degrees of warmth, it will be impossible to preserve the various kinds of plants from the several parts of Africa and America, which are
every

every year introduced into the gardens of the ingenious. For when plants from very different climates are placed in the same green-house, some perish for want of heat, while others are destroyed by having too much of it; and this is often the case in such green-houses, where there are large collections of plants.

GROTESQUE, something whimsical, extravagant and monstrous. The word is also particularly applied to a work or composition in sculpture or painting in the Grotesque manner or taste, consisting either of things that are merely imaginary, and have no existence in nature, or of things turned and distorted out of the way of nature, so as to raise surprize and ridicule. Grotesque work is the same with what is sometimes called antique. The name is said to have taken its rise hence, that figures of this kind were in ancient times much used in adorning the grottos, wherein the tombs of eminent persons or families were inclosed; such as that of Ovid, whose grotto was discovered near Rome, about one hundred years since. It is particularly used to signify those fanciful ornaments of animals, interspersed among foliages, fruit, &c. as those painted by Raphael Urbin in the Vatican, and those carved by Michael Angelo, in the cieling of the portico of the capitol.

GROTTO, is a large deep cavern in some rock or mountain. It is also a small artificial edifice made in a garden in imitation of a natural Grotto. The outsides of these Grottos are usually adorned with rustic architecture, and their inside with shell-work, coral, &c. and also furnished with various fountains, and other ornaments. A Grotto may be built with a little expence of glass, cinders, pebbles, pieces of large flints, shells, moss, stones, counterfeit coral, pieces of chalk, &c. all bound or cemented together with a proper cement.

GROUND, in painting, the surface upon which the figures and other objects are represented. The Ground is properly understood of such parts of the piece as have nothing painted on them, but retain the original colours upon which the other colours are applied to make the representations. A building is said to serve as a Ground to a figure, when the figure is painted on the building. The Ground behind a picture in miniature is commonly blue or crimson, imitating a curtain of sattin or velvet.

GROVE, or GROOVE, in joinery, &c. a term used to signify the channel that is made by their plough in the edge of a moulding, stile, or rail, &c. to put their pannels in, in wainscoting.

GROUP, in painting and sculpture, an assemblage of figures, of men, beasts and fruits, &c. which have some apparent resemblance to one another. It is necessary, in a good piece of painting, that all the figures be divided into Groups; this has somewhat in it of the nature of symphony or concert of voices; for as in the one the voices must sustain each other, in order to fill the ear with an agreeable harmony from the whole; so in

Groups,

Groups, if the parts or figures are not well disposed, something will be found disagreeable.

A Group of columns, in architecture, is used when we speak of three or four columns joined together on the same pedestal; but when there are but two, the word couple is used, and not Group.

GUTTÆ, in architecture, ornaments in the form of little cones, in the platform of the Doric cornice or architrave, underneath the triglyphs, representing a sort of drops or bells, usually six in number. They are sometimes called *lacrymæ*, *campanæ*, or *campanulæ*.

GUTTERS, in architecture, a kind of canals in the roofs of houses, serving to receive and carry off the rain. These Gutters are of two kinds in respect to their position, for they are either such as come near a parallel with the horizon, or such as incline in a vertical position to the horizon.

The first kind of Gutters may be called parallel Gutters, and may be distinguished into three sorts, which are covered with lead: 1. Either it is a Gutter between two roofs, which stand parallel to each other, being made upon the feet of the rafters of two roofs, which meet together: 2. A Gutter where a building has a cantaliver or modillion cornice, which projects one foot and a half, or two feet beyond the walls, then the roof is set with the feet of the rafters no farther out than the wall, but rather within it, so that the joists of the upper floor lie out beyond the walls, and also beyond the feet of the rafters, which is covered with lead. The third sort of these parallel Gutters are in flat roofs, which are usually called platforms, where are also Gutters for the water that run from the platform to descend to, which is from thence conveyed off from the building by leaden pipes. In the laying of parallel lead Gutters, great care should be taken that the Gutter boards, &c. lie not too near parallel with the horizon, but in such a position that there may be a good current, for if it be laid too near a level, the water will be very subject to stand in places, if it chances to stick a little in the middle, which some Gutters are apt to do. Some Gutters have a layer of sand for the lead to lie upon, but there are reasons that render this method not approveable. Because some sorts of sand does very much corrode and decay the timber that lies near it; and when a Gutter is laid on sand, a very small weight falling on it will make dents in it, and in those dents the water will stand, and this will be a means of decaying the lead the sooner.

In laying of leads for Gutters upon boards, it is common for plumbers to folder them when they are so long, that a sheet of lead will not reach. In doing this, they usually cut a channel cross the Gutter-boards at the end of the sheet where the foldering is to be, and to beat down the ends of both the sheets that are to meet here, into the channel, which, when it is done, there will remain a little cavity, which is filled up with
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the folder level with the rest. The lead which is usually laid in Gutters is that which weighs about eight or nine pound to the foot.

VERTICAL GUTTERS, are such as are made by two roofs meeting at right angles one to another, or, which is the same thing, made by the end of one roof joining to the side of another. These Gutters are made either of lead or tile. As to those made with lead, unless the builder will be at the charge, they need not be altogether so thick for these vertical ones, as for the parallel ones ; for these vertical ones will last as long, if laid with lead of about six or seven pound to the foot, as parallel ones with lead of nine or ten pound to the foot.

Gutters laid with tiles, are also of two kinds : those made of concave or Gutter-tiles, and plain tiles. In the plain tile-gutters, there is a Gutter-board laid, which raises them from pointing to an angle. And in laying on the tiles, the workman begins at one side of the Gutter, and so works across, as if it were plain work, and then brings the next row of tiles back again ; so that he works from right to left. Gutters which are laid after this manner, are not angular, but of a distorted curvilinear form ; by which means they are not so subject to be furred up with the mortar which washes out of the adjacent tiles.

In laying of three point Gutters, they begin and lay one tile on one part of the roof, it is no matter which part first, and lay one corner of the tile just in the middle of the Gutter ; and then lay another on the other part of the roof, with its corner just in the middle of the Gutter, also that the corner of the second tile is contingent with the first ; and then lay another tile in the Gutter, with its corner, as it were, betwixt the other two, and to them. When they have done thus, they proceed in the work, and lay a tile on each part of the roof, as before, and another betwixt them in the Gutter, proceeding in their work in this manner, till they have finished the Gutter. And this is what is called the three-point Gutter : for three points, or angles of tiles, always come together. Here you are to take notice, that only three inches square of the middle tile is visible, if the gage be seven inches, the rest of that tile being covered with the next row of tiles above it. These Gutters are very handsome, and if well done, secure also ; yet if they let the water into the house, by reason of some stoppage, or broken tile in the Gutter, they are very troublesome to mend. Either of these plain tile Gutters are cheaper to the master-builder, than concave ones ; because plain tiles are cheaper than Gutter tiles, they being in many places not above one-fourth part of the price.

GUTTER-TILES are of a quadrangular form, consisting of two straight sides, of about ten inches and a half long, and of two circular sides, the one convex, the other concave ; the convex side is about fourteen inches, and the concave one about two inches. This is their form as to their

edges or sides. With respect to the plane; at the little end they are bent circular, and so likewise at the convex great end, at first like a corner tile; but then they bend the corners of the great end back again; so that if a person look against the end of the broad edge, it consists of a circular line betwixt two straight ones. This you are to understand, is when you hold the concave side of the tile downwards. These tiles are laid with their broad ends and hollow side upwards.

H.

HALL, in architecture, a large room at the entrance of a fine house and palace. In the houses of ministers of state, magistrates, &c. it is the place where they dispatch business, and give audience. In very magnificent buildings, where the Hall is larger and loftier than ordinary, and placed in the middle of the house, it is called a saloon. The word Hall in old writers is used for a mansion-house, and to this day, in many parts of the kingdom, gentlemen's seats are called Halls.

In town a Hall is a place of reception for servants; therefore in this, neither magnitude nor elegance are useful; in the country, where there are other ways into the house, the Hall may be an elegant room, and it is there we propose its being made large and noble. It serves as a summer-room for dining; it is an anti-chamber, in which people of business, or of the second rank, wait and amuse themselves; and it is a good apartment for the reception of large companies. A good Hall has many other uses, amongst which are the representation of theatrical pieces. These are reasons for the spaciousness of a Hall; but then, if the rule of general proportion be not observed, the bigness of this room may make all those look little into which we pass afterwards.

It is a fashion in some places, to give Halls the form almost of galleries; to make them very long in front and very shallow; this answers the purpose of giving room behind, but it is an ill way of getting it. Halls of any consequence are seldom thought of unless for large houses in the country; and there it will be easy to take in a few more feet of ground, and not to make the Hall a slip, in order to give depth to the parlours.

The proportion of breadth to length should be very considerable in a Hall. Palladio says that it may be made twice as long as broad, but never should exceed that length. This is indeed carrying the length of a Hall to the full proportion; and that author adds, with great justness, that the nearer they approach to square the better. From what we have observed upon a variety of instances, it seems, that from one and a third to one and a half the breadth, is the proper and most proportional length of a Hall. The best height for a Hall is somewhat less than its breadth, but
here

here we are to consider the difference of flat and arched cieling, as in other rooms. In those Halls which have coved cieling, the height may be within a twelfth part the measure of the breadth; but in those with the cieling flat, four fifths of the breadth is a very good general proportion; however in this the architect has a great deal of latitude for the saving room above; for the Hall may be lower than either of these allowed proportions, and yet not liable to great censure.

HARMONY, in architecture, is an agreeable relation between the parts of a building. In painting, both in the composition and colours of a picture: the former denotes the connection between the figures, with respect to the subject of the piece; in the colouring it denotes the agreeable mixture of different colours. M. de la Chambre derives the Harmony of colours from the same proportions as that of sounds. On this principle he lays down green as the most agreeable colour corresponding to the octave; red to a fifth, yellow to a fourth, &c.

HEAD, in architecture, an ornament of carved work, or sculpture, frequently serving as the key of an arch, or platband on other occasions. These sort of Heads usually represent some of the heathen deities, virtues, seasons, ages, &c. with their attributes, as a thunderbolt for Jupiter, a diadem for Juno, a trident for Neptune, a crown of ears of corn for Ceres, a helmet for Mars, a caduceus for Mercury, &c. The Heads of beasts are also used in places suitable, as an horse's head for an equerry; a deer's, or boar's head, for a park or forest; a dog's head for a kennel; a bullock's or sheep's, for shambles, or a market-house. In metopes, friezes, and other parts of certain antique Doric temples, we see representations of bullocks or rams heads dead, as a symbol of the sacrifices offered there.

HEADS with bricklayers, a term used to signify half a tile in length, but to the full breadth of a tile; these they used to lay at the eaves of a roof.

HELIX, in architecture. Some distinguish between it and spiral. Daviler says a stair-case is helical, when the steps wind round a cylindrical newel; whereas the spiral winds round a cone, continually approaching nearer its axis. Helix also denotes, in architecture, the cauliculus or little volutes under the flower of the Corinthian capital, called likewise urillæ. These Helixes of the Corinthian however give it some distant resemblance of the Ionic, though when examined they are found to be smaller and more numerous. The word comes from the Greek, which originally expresses a twisted stalk of ivy, but from thence is made to represent any thing that is twisted or spiral.

HEXASTYLE, in ancient architecture, a building with six columns in front.

HINGES;

HINGES, in building, those iron or brass joints, whereby doors, tables, &c. open, shut, or fold, &c. Of these there are various species.

HIPPODROME, a kind of building erected by the ancients for the exercise and sportings of their horses. It was spacious, of a long form, circular at the two ends, and encompassed. The same word is sometimes also used to express the place where they ran their races.

HIP-ROOF, among carpenters, called also Italian roof, is a roof which has neither gable-head, shread-head, nor jerken-head, by which is meant such heads as are both gable and Hip at the same end; for it is a gable or up-right as high as the collar-beam, and then there are two short Hips, which shut up with their tops to the tops of a pair of rafters, which country carpenters call singulars.

HOD, a well known instrument used by labourers to carry bricks, mortar, &c. in, at the building, or repairing of houses, &c.

HOLLOW, in architecture, a concave moulding, about a quarter of a circle, called by some a casement, and by others an abacus.

HOUSE, in architecture, a habitation or place built with conveniencies for dwelling in; thus we say town House, country House, &c. It will not be improper, in this place, to speak of the original construction of houses.

Caverns and arbours were undoubtedly the first habitations, for nature's own hand constructed these, and men, destitute of better security, would take to them and finish them; but these, though the first houses, could not be long their only habitations. The mud wall tenement naturally rose first, for we may very well believe that early cabins were built with clay. The sun would harden these rude walls by its heat, and thence the mind of man would soon conceive the method of cutting out the wet clay into shapes, and drying it before using in his House. Thus bricks must have been an early invention, and they would doubtless have been in universal use, had not nature disclosed to those who dug for this poor material, her mines and stores of stone and marble. From the sight of these greater and noble materials, men conceived the ideas of greater buildings. This is the plain and natural course of things, and this probably was the origin of architecture; but when it happened, or what quarter of the world, are points which dreaming monks might better study than people who enjoy the present advantages of science. It is enough for us to acknowledge the defect of information; and, while we trace the progress of the art thus from reason, to say it is too old for history. Man's sense of feeling told him that he wanted a house for shelter and defence; and his reason, given him by the Creator for that purpose, taught him how to set about it.

The next thing to be considered is, the giving the edifice a proper strength; the House is to be suited either to the condition of the person

who

who is to inhabit it, or to the place where it stands ; the first is the point in building by commission, for a family , the other in building for a chance of letting. The latter is the common practice in great towns ; but, even in that, there is something to be considered with respect to suiting to the inhabitant. Though the architect in this case will not know who is to live in his edifice, yet he can very well guess of what rank he will be, and this according to the place where it stands ; thus much is to be considered in building in this general and random way ; the street, or square, the neighbourhood, the conveniences, and the other concurrent circumstances, will instruct the builder ; for he would be very indiscreet who should build a shed in Grosvenor-square, or a palace on Salt-Petre Bank ; and thus far he will be able to proportion the building to the tenant, or purchaser, though unknown.

After this first consideration of the general condition and extent of the building, comes the article of strength. Whatsoever be the size, the solidity must be proportioned : for when the house is not able to support itself, all other care is lost upon it. We see a strange difference between the buildings of earlier ages, and those of the present time, in respect of this article of strength, but the reason is plain ; the nature of the tenures in London has introduced the art of building slightly. The ground landlord is to come into possession at the end of a short term, and the builder, unless his Grace tie him down to articles, does not chuse to employ his money to his advantage. It is for this reason we see houses built for sixty, seventy, or the stoutest of this kind for ninety-nine years. The care they shall not stand longer than their time occasions many to fall before it is expired ; nay, some have carried the art of slight building so far, that their Houses have fallen in before they were tenanted. From this general practice, in the common way of working, has been introduced the same conduct in better buildings ; and it is not often that we see a structure, like the Horse Guards, built for posterity. But whatever be the occasion, there is nothing that more deserves or demands the interposition of the legislative power ; the safety of the subject is the concern of every wise government ; and it is certain the present method of running up houses in London, not only disgraces us in the eyes of strangers, but threatens continual disasters. Till such a controul shall be laid upon bad builders by public authority, those who have more skill and more integrity should distinguish themselves from them by their work.

Two things give strength to a building, the choice of good materials, and the putting them well together ; and the first care, in the regard of strength, is that the supports be equal to the weight they carry ; these supports are, in common buildings, plain walls. When walls are not able to support the incumbent force, recourse is had to spars and buttresses ; but these are an unseemly and very disagreeable sight. To avoid

this, the architect should consider in time what the force, or pressure, will be, and proportion the solidity accordingly ; great arches are the most subject to impair the strength of walls in this manner ; but they should be lightened, and the wall strengthened in the original structure of the building. The occasion on which buttresses admit of most excuse, is on the outside of Gothic churches ; though in these a good architect could have contrived to avoid the need of them, by lightening the arch, and strengthening the wall in its plain, perpendicular form. When we see this sort of support on any other occasion, it is a great disgrace to the architect. The architect having thus, by an honest choice of materials, and a judicious manner of proportioning the superstructure to the supports, taken care of the main consideration of strength, the next regard is to be shewn to proportion and regularity, in the distribution of the several parts.

The extent of ground being determined, the materials chosen, and the weight of the roof, and thickness of the walls, settled in the builder's mind, he is next to consider the article of proportion. Here is a space to be covered with building ; and the great consideration is its division into parts, for different uses, and their distribution. In this regard is to be had two things, the convenience of the inhabitant, and the beauty and proportion of the fabric. Neither of these should be considered independently of the other, because if it be, the other will not fail to be sacrificed to it ; and this, which would be very disagreeable, is never absolutely necessary. If the house be for a person in trade, the first and principal attention must be shewn to the article of convenience ; but with this the builder should always carry in his mind the idea of beauty, proportion, and a regular distribution of the parts ; that whenever it can be done, he may favour the one, while he is absolutely consulting the service of the other ; in the same manner, when the house is for a person of fashion, the beauty and proportional disposition of the parts is to be principally considered ; yet the great and needful article of convenience must not be disregarded. In the building where there is to be a shop, it would be absurd to thrust the parlour into the middle of it, in order to give that room an exact proportion ; but, on the other hand, a little may be retrenched from some less conspicuous parts of the shop, to enlarge that necessary apartment behind it. The merchant's House must have warehouse room, but that need not break in upon every apartment, because there is no necessity for any exact inch of ground in a particular spot for this use, though there must be a certain quantity upon the whole.

The parlour, in a small private House, is a very convenient room ; but, as it is not the apartment of most shew, there is no necessity it should reduce the passage to an alley ; and in larger Houses, inhabited by persons of distinction, there must be anti-chambers, and rooms where
 4 people

people of business may attend the owner's leisure. These must not be ill constructed, because those of some rank may often wait in them; and beside, every thing in a great House should have an air of grandeur; but, on the other hand, the care of rendering these convenient and proper for their use, is not to extend so far as to intrench upon the rooms of state and elegance.

The proportion of the several parts of an edifice is of two kinds; for they are to be adapted, in this respect, first to the whole building, and afterwards to one another. It is strange to see that many of our architects, who have been able to plan out the whole of a good building, have miscarried miserably in the proportion of its parts. It is in this the ancient architects are found, by all that remains of them, to have been most particularly excellent; they formed at once an idea of the whole structure they designed, and of all its apartments, and it is evident they throughout kept that general idea always in remembrance. It is hence we see such a perfect harmony in all their works. It is in this the student who would distinguish himself in architecture should principally follow them in the disposition of a house. The first kind of proportion is that of the several parts to the whole, and in this reason is a very plain and general guide. We may divide Houses under three heads, the large, the middling, and the small; and in each of these classes plain sense will dictate, that the several apartments should be of the same character with the whole; that the rooms in the large house should be large, in the middling, they should be middling, and in the small they should always also be small. This is proportioning the parts of a building to the whole; and this rule, which is directed by common reason, is confirmed by all the writers on architecture; for sciences are built upon reason, and experience which supports her determinations.

The dimensions not only of every room, but of every part of a House whatsoever, should be laid in a just proportion to the extent of the ground plan; for it would be absurd to see a great House divided into a multitude of closets, or a little House consisting only of a hall and dining-room. Here proportion falls in with the rule of convenience; for such a House would not be more absurd than inconvenient. The apartments being thus suited to the House in general, are next to be proportioned to one another; this, one would think, were as rational and plain a precept as the other, yet we see it continually violated. Nothing is more common than to see a House built for the sake of one room; and in that case the rest not being proportioned to that room, it seems not to belong to the House, and there wants that symmetry which is the great beauty in building. In Houses which have been some time built, and which have not had an out of proportion room, the common practice is to build one to them; this always hangs from one end, or sticks to one side, of the House,

House, and shews to the most careless eye, that though fastened to the walls, it did not belong to the building.

The custom of routs has introduced this absurd practice. Our forefathers were pleased with seeing their friends as they chanced to come, and with entertaining them when they were there. The present custom is to see them all at once, and entertain none of them; this brings in the necessity of a great room, which is opened only on such occasions, and which loads and generally discredits the rest of the edifice. This is the reigning taste of the present time, a taste which tends to the discouragement of all good and regular architecture, but which the builder will be often under a necessity to comply with, for he must follow the fancy of the proprietor, not his own judgment. Whatever the false taste of any particular time may adopt, the builder though he complies with it from the orders he receives, yet he must never suppose that the caprice, or fashion, can change the nature of right and wrong. He must remember that there is such a thing as truth, though the present mode will not follow its steps; and establish it as a maxim in his own mind, that proportion and regularity are real sources of beauty, and always of convenience.

In the disposition of parts in an edifice, it is incumbent upon the architect to give a proportion and harmony to the whole building, and to make every part of it as suitable to that whole as its nature will admit, yet he must not endeavour to make all equally elegant. This has been the false taste of some, who have been profuse of ornament, and yet have not been able to give any real beauty. They have wondered at the effect, but this is the reason; various parts of a House are suited to various services and purposes, and they are not all to be contrived for shew. The plainness of some will set off, and shew to advantage the beauty of others. To avoid this error, when the architect has laid down the dimensions of the several parts of the edifice, let him consider which of these are calculated for greater, and which for lesser services, and accordingly distribute among them all that gives dignity or plainness. There is no objection to plainness, when it is suited to the occasion, and the variety between that and such apartments as are spacious and elegant, gives a lustre even to the latter; the plain decency of the humbler rooms, while it is proper, because it suits them to their purposes, makes them also serve as a foil to the others. Thus much may be sufficient to mention in this place, concerning those ornaments whose foundation enters into the original design of the apartments, all other decorations we shall speak of hereafter under their proper heads.

HYPOTRACHELION, in architecture, denotes a little frieze in the Tuscan and Doric capitals, between the astragal and annulets, called likewise colerin,

colerin, gorgerin, &c. By some it is applied to the neck of any column, or that part of the capital below the astragal.

I.

JAMB, or JAUMB, among carpenters, an appellation given to door-posts, as also to the upright posts at the sides of window-frames; and among bricklayers, it denotes the upright sides of the chimnies, from the hearth to the mantle-tree.

ICE-HOUSE, is a building contrived to preserve Ice for the use of a family in the summer season. Ice-houses are more generally used in warm countries, than with us, particularly in Italy, where the meanest person, who rents a house, has his vault or cellar for Ice.

ICHTHOGRAPHY, in architecture, a description or draught of the platform or ground-work of a house, or other building. Or it is the geometrical plan or platform of an edifice or house, or the ground-work of an house or building, delineated upon paper, describing the form of the several apartments, rooms, windows, chimnies, &c. In perspective, the view of any thing cut off by a plane parallel to the horizon, just at the base of it. Among painters it signifies a description of images, or of ancient statues of marble and copper, of busts and semi-busts, of painting in fresco, Mosaic works, and ancient pieces of miniature.

IMPOST, is a term used to express a fascia, or a small cornice, which crowns a pier, or pilaster, and supports the first stone from whence an arch springs. Sometimes the entablature of the order serves for the impost of an arch, and this has a fine appearance.

INSULATED, in architecture, detached from any other building. A church is insulated when it stands contiguous to no other edifice, and so of any other building. The word comes from the Latin, *insula*, an island, these buildings being separate from others as islands are from the continent, or nearest main land. A column that stands alone, and free from any wall is called an Insulated column. The columns of the Periptere temples of the ancients were Insulated; the monument in London is an Insulated column.

INTERCOLUMNIATION, in architecture, implies the space between two columns, which is always to be proportioned to the height and bulk of the columns.

INVENTION, in painting, the choice of which the painter makes of the objects that are so to enter the composition of his piece.

JOISTS, or JOYSTS, in architecture, those pieces of timber framed into the girders and summers, on which the boards of the floor are laid. Joists are from six to eight inches square, and ought seldom to lie at a

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greater

greater distance from each other than ten, or at most twelve inches, nor ought they ever to bear a greater length than ten feet, or to be less into the wall than eight inches. All Joists on the back of a chimney ought to be laid with a trimmer, at six inches distance from the back. Some carpenters furr their Joists, as they call it; that is, they lay two rows of Joists, one over another, the undermost of which are framed level with the under side of the girder; and the uppermost, which lie cross the lower ones, lie level with the upper side of the girder.

IONIC ORDER, one of the three original orders of the Greeks, of a middle nature between the Doric, which was their plainest; and the Corinthian, which was their most ornamented. It is also the middle order of the five, taking in the two added by the Romans, the Tuscan and Doric being stronger, the Corinthian and Composite more ornamented. The base of the Ionic consists of a torus and two cavettos, with astragals between them. Vitruvius was the inventor of this base, which is liable to censure, because smaller, and consequently weaker in the lower than the upper part. The ancients, when they gave a base to this order, used the Attic: often they gave it none. Many give the Ionic the Corinthian base; but this, though better than its own, is not so well as the Attic. The shaft is eighteen semi-diameters, or nine diameters, in height; in some of the ancient buildings it has but sixteen semi-diameters, which is the present proportion of the Doric; but the Doric was then lower: when they gave the Doric sixteen, they raised the Ionic to eighteen, to preserve the distinction. When the shaft of the Ionic is fluted, the flutings should be twenty-four; and they are often filled up with a cable or baton for one-third of the height, and the rest of their space left empty. Some make the flutings of the Ionic thirty, in which they have the authority of Vitruvius to support them. In these things architects take great liberties: the only fluted Ionic column we know of among the remains of the antique in Rome, is that in the temple of Fortuna Virilis, and the flutings there are only twenty.

The capital in the Ionic order consists of three parts, an abacus, a rind, which is the hollow of the volute, and an ovolo, under which is an astragal. The abacus supports the entablature, the rind produces the scrolls or volutes, which are the great characteristics of this order, and the ovolo is frequently carved. The Ionic entablature has its architrave divided into faces; its freeze is often made to swell, but this is not found in the most ancient buildings; and the cornice has simple modillions. The Ionic is an order that stands as a medium between the strong and rich. It is said the famous temple of Diana at Ephesus was of this order; at present it is much used in churches; and, when justly executed, has a very beautiful effect.

This

This order has one advantage above any of the rest, which consists in this, that the fore and hind parts of its capital are different from its sides ; but this is attended with an inconvenience, when the ordonnance is to turn from the front of the building to the side ; to obviate which the capital may be made angular ; as is done in the temple Fortuna Virilis. Scamozzi, and some other modern architects, have introduced the upper part of the Composite capital, in lieu of the Ionic, imitating that of the temple of Concord, whose four sides are alike. To render it a little more beautiful, the volute may be made a little oval and inclining.

IRREGULAR COLUMN, in architecture, a column which does not deviate from the proportions of any of the five orders, but whose ornaments, whether in the shaft or capital, are absurd and ill chosen.

K

KEEL, in naval architecture, the principal piece of timber first laid upon the blocks, which supports the whole fabric of a ship in the same manner as the back-bone sustains the body. When this cannot be had of a sufficient depth in one piece, there is a strong thick plank fastened to the bottom, called the false keel, which also serves to save the bottom of the main keel.

KEY, is a well-known instrument for opening and shutting the locks of doors, chests, bureaus, and the like. The names of the several parts of a Key are these : the pin-hole, drilled into the end of the shank ; the step, or dap-ward ; the hook-ward ; the middle-ward ; the cross-ward ; the main-ward ; the pot ; the bow-ward ; the bow, or handle ; and the piece of steel containing the wards, is called the bit of the Key.

KEY-STONE of an arch, or vault, that placed at the top or vertex of an arch, to bind the two sweeps together.

L

LACUNAR, the ancient name for what we call a soffit, when it consisted only of compartments, sunk or hollowed, without the division of platbands, or spaces between the several pannels. But when they were added, it was called Laquear.

LANTERN, in architecture, a little dome raised over the roof of a building, to give light, and serve as a crowning to the fabric.

LAQUEAR, in ancient architecture, is a term for what we express by the Italian word soffit, a cieling divided into compartments, and those ornamented with platbands. Where there were the hollow compartments only,

only, they called it Lacunar, from Lacus a hollow place: but when there were these other ornaments, they called it Laquear, from the rows of the platbands resembling nooses, *laquei*.

LARMIER, in architecture, a large square flat and massy member of a cornice, placed between the cymatium and the ovolo, and called also the Corona. Its use is to disperse the water, and cause it to fall at a distance from the wall drop by drop. It has its name from Larmier hence, *larme* being French for a tear.

LEAVES, in architecture, are ornaments of carving, given to the entablatures of the orders, and other parts of decorated buildings: they are either twisted into festoons, or spread irregularly over a freeze, or other part. The ancients used two kinds of Leaves, the one natural, the other imaginary; among the natural were those of the laurel, palm, acanthus, and olive: but they took such liberties in the forms of these, that they might be called in a great measure imaginary too. The introducing imaginary Leaves reflected upon their taste, for it was an insult upon nature; and in this very unpardonable, that nothing the art of the greatest sculptor can invent in this way will ever come up to what is afforded in nature: the variety of Leaves being endless, and their forms, in innumerable instances, in the highest degree elegant. We see a great deal of this imaginary foliage in the Gothic ornaments, without wonder, because these all was professedly left to fancy; but it is with concern and astonishment we meet with it in the antique.

LEVEL, among carpenters and paviours, consists of a long ruler, in the middle whereof is fitted, at right angles, another somewhat bigger, at the top of which is fastened a line, which, when it hangs over a fiducial line at right angles with the base, shews that the said base is horizontal. Sometimes this Level is all of one board.

Among masons, it is composed of three rules, so joined as to form an isocles-rectangle, somewhat like a Roman A, at the vertex whereof is fastened a thread, from which hangs a plummet that passes over a fiducial line, marked in the middle of the base, when the thing to which the Level is applied is horizontal; but declines from the mark when the thing is lower on one side than on the other.

LINTEL, in architecture, a piece of timber that lies horizontally over door-posts and window-jambs, as well to bear the thickness of the wall over it, as to bind the sides of the wall together.

LIST, or LISTELL, in architecture, is a little square member serving to crown, or to accompany a larger; or sometimes divide the flutings of a column. The word comes from the Italian *listello*, signifying a little girdle, or band; it is called also the fillet, and by some a square.

LOCK, a well known instrument for securing doors, chests, &c. and only to be opened by a key.

LUTHERN, in architecture, a kind of window over the cornice, in the roof of a building; standing perpendicularly over a naked wall, and serving to illuminate the upper story. Lutherns are of various forms, as square, semi-circular, round, called bulls eyes, flat arches, &c.

M.

MALLET, a kind of large wooden hammer, used by artificers who work with a chissel, as sculptors, masons, and stone-cutters, whose mallets are commonly round; and by joiners, carpenters, &c. who work with square headed Mallets.

MANTLE, or **MANTLE-TREE**, in architecture, the lower part of the chimney, or that piece of timber which is laid across the jaumbs, and sustains the compartment of the chimney-piece.

MARBLE, a genus of fossils, being bright and beautiful stones, composed of small separate concretions, moderately hard, not giving fire with steel, fermenting with, and soluble in acid menstrua, and calcining in a slight fire. The colours of Marbles being a very obvious and striking character, they are arranged according to them in the following divisions.

1. Of the white plain Marbles there are two sorts; the Parian Marble of the ancients, and statuary Marble of the moderns, an extremely bright and elegant Marble; and the Carrara Marble; a very fine Marble, more compact and close than the former, but less bright.
2. Of the plain yellowish Marbles there is only one sort, which is a hard, pale yellow, and glossy Marble, found in many parts of Italy.
3. Of the bluish and black Marbles there are a great many species, as the Chian Marble, Basaltes, &c.
4. Of the plain green Marbles there is only one kind, the Lacedemonian Marble of the ancients.
5. The pale coloured or whitish brown, commonly called Darby Marble.
6. The green Marbles with shells.
7. The black Coralliode Marble, with and without shells.
8. Of the white variegated Marble there are a great many species, variegated with purple, brown, red, blue, &c.
9. Of the brown variegated Marbles there are likewise several sorts, some with red veins; others with white, black, or brown veins.
10. Of the yellow veined and variegated Marbles some are veined with purple, and others with blue.
11. Of the black variegated Marbles, some are veined with white, and others with blue, yellow, red, &c.
12. The green variegated Marbles are likewise distinguished by the colour of their veins.
13. The grey spotted Marbles are variegated, some with black and others with green spots.
14. The red variegated Marble is the Brocatello of the Italians, with white and gold veins.

Polishing of Marble is performed by first rubbing them well with a free-stone, or sand, till the strokes of the axe are worn off, then with pumice-stone, and afterwards with emery.

See

Colouring

Colouring of Marble. The colouring of Marble is a nice art, and in order to succeed in it, the pieces of Marble, on which the experiments are tried, must be well polished, and clear from the least spot or vein. The harder the Marble is, the better it will bear the heat necessary in the operation; therefore, alabaster and the common soft white Marble are very improper to perform these operations upon. Heat is always necessary for the opening the pores of the Marble, so as to render it fit to receive the colours; but the Marble must never be made red-hot, for then the texture of the Marble itself is injured, and the colours are burnt, and lose their beauty. Too small a degree of heat is as bad as too great; for in this case, though the Marble receive the colour, it will not be fixed in, nor strike deep enough. Some colours will strike even cold, but they are never so well sunk in as when a just degree of heat is used. The proper degree is that which, without making the Marble red, will make the liquor boil upon its surface. The menstruums used to strike in the colours, must be varied according to the nature of the colour to be used. A lixivium made with horse's or dog's urine, with four parts of quick-lime, and one part of pot ashes, is excellent for some colours; common ley of wood-ashes does very well for others; for some, spirit of wine is best; and, for others, only liquors, or common white-wine.

The colours which have been found to succeed best with the peculiar menstruums, are these: stone-blue dissolved in six times the quantity of spirit of wine, or of the urinous lixivium; and that colour which the painters call litmuse, dissolved in common ley of wood-ashes. An extract of saffron, and that colour made of buckthorn berries, and called by the painters sap-green, both succeed well dissolved in urine and quick-lime, and tolerably well in a spirit of wine. Vermillion, and a fine powder of cochineal, succeed also very well in the same liquors. Dragon's blood succeeds very well in spirit of wine, as does also a tincture of logwood in the same spirit. Alkanet root gives a fine colour, but the only menstruum to be used for this is oil of turpentine: for neither spirit of wine, nor any lixivium, will do with it. There is another kind of sanguis draconis, called Dragon's blood in tears, which, mixed with urine alone, gives a very elegant colour.

Besides these mixtures of colours and menstruums, there are some colours which are to be laid on dry and unmixed. These are Dragon's blood, of the purest kind, for a red; gamboge for a yellow; green-wax for a green; common brimstone, pitch and turpentine, for a brown colour. The Marble, for these experiments, must be made considerably hot, and then the colours are to be rubbed on dry in the lump. Some of these colours, when once given, remain immutable; others are easily changed or destroyed. Thus the red colour given by Dragon's blood, or by a de-

coction of logwood, will be wholly taken away by oil of tartar, and the polish of the Marble not hurt by it.

A fine gold colour is given in the following manner; take crude sal armoniac, vitriol, and verdigrease, of each equal quantities; white vitriol succeeds best, and all must be thoroughly mixed in fine powder.

The staining of Marble to all the degrees of red or yellow, by solutions of dragon's blood or gamboge, may be done by reducing these gums to powder, and grinding them, with the spirit of wine, in a glass mortar; but, for smaller attempts, no method is so good as the mixing a little of either of these powders with spirit of wine, in a silver spoon, and holding it over burning charcoal. By this means a fine tincture will be extracted, and, with a pencil dipped in this, the finest traces may be made on the Marble, while cold, which, on the heating it afterwards, either on sand, or in a baker's oven, will all sink very deep and will remain perfectly distinct on the stone.

Arundelian Marbles, ancient Marbles with a chronicle of the city of Athens inscribed on them, many years before our Saviour's birth, presented to the university of Oxford by Thomas, earl of Arundel, whence the name.

MASON, a person employed under the direction of an architect, in the raising of a stone building.

MASONRY, in general a branch of architecture, consisting in the art of hewing or squaring stones, and cutting them level or perpendicular, for the uses of building; but in a more limited sense, Masonry is the art of assembling and joining stones together with mortar.

All the kinds of Masonry now in use may be reduced to these five, viz. bound Masonry; that of brick-work, where the bodies and projectures of the stones inclose square spaces, or pannels, &c. set with bricks; that demoulon, or small work, where the courses are equal, well squared, and their edges or beds rusticated; that where the courses are unequal, and that filled up in the middle with little stones and mortar.

MASQUES, in architecture, certain grotesque faces, used to fill vacant places, as friezes, pannels of doors, keys of arches, &c.

MASSIVE, among builders, an epithet given to whatever is too heavy and solid; thus a massive column is one too short and thick for the order whose capital it bears, and a Massive wall is one whose opening or lights are too small in proportion.

MAUSOLEUM, a magnificent tomb, or funeral monument. The word is derived from Mausolus, king of Caria, to whom Artemisa, his widow, erected a most stately monument, esteemed one of the wonders of the world, and called it, from his name, Mausoleum.

METOPES, in architecture, is a name given to the square spaces between the triglyphs of the Doric frieze. We have observed before, that the
Doric

Doric frieze is ornamented with triglyphs, or channelled figures ; these are placed at certain distances one from another, and the spaces between one and another of them are the Metopes. The distance at which the triglyphs regularly stand, makes these square. They are sometimes left naked, but they were adorned among the ancients with parts of beasts, instruments of sacrifice, and other figures ; and they have in general something placed upon them in the modern works of elegance, according to the fancy of the architect. The ancient use of the Doric was in temples, and some would restrain it to them at this time, because of the difficulty there is of managing a frieze thus necessarily divided in common buildings. When there is a space less than the proper Metope, as at the corner of the Doric frieze, it is called a semi-Metope, or demi-Metope.

MEZANINE, a kind of little story, called also an enterstole, it is placed between two principal stories, and serves for apartments for upper servants.

MINUTE, architects express by this term a thirtieth part of a semi-diameter of a column, that is, a sixtieth part of a diameter ; and sometimes, speaking of weights, the twelfth part of an ounce.

MODERN, architects distinguish buildings of former ages into three classes, antique, ancient, and modern ; the two first terms are exactly the same in their original sense, but they appropriate them to different meanings. Antique signifies a remain that was executed when the arts were in their greatest purity and perfection ; and ancient, an old piece of work, but not of that perfect truth. The word Modern is used as distinguished from both these ; but its sense is not well fixed ; some mean, by modern structures, those Gothic buildings which are so common at this time, and, though built long since, are Modern in comparison of the names just mentioned ; others, by Modern buildings, mean the Italian method, but that is only the antique revived. Others express by this term the new whimsical structures, which have so much of fancy and so little judgment or taste, that they deserve no name at all. It is a reflection upon our country to call these Modern, as if the general taste were as much depraved as that of the few particular people who erect these baubles.

MODILLIONS, in architecture, are ornaments in the entablatures of the richer orders. They are little brackets, or consoles ; and their place in the entablature is under the soffit, or bottom of the drip. They ought to be so placed that one may always be over the middle of the columns. These Modillions are most of all used in the Corinthian order, in which they are enriched with carvings : in the Ionic and Composite they are more simple. And in the other orders they are not properly used at all. The word is Italian, with a different spelling, *modiglioni* signifying the same thing. They seem to be introduced as supports, but are nothing more than ornaments. Their form is commonly that of the letter S, and fitted to the soffit of the cornice. The word mutule was originally used
in

in common with modillion, as signifying in every respect the same thing ; but at this time it is confined to the Doric order. The mutules in the Doric always answer to the triglyphs.

MODULE, in architecture, a certain measure or bigness, taken at pleasure, for regulating the proportions of columns, and the symmetry, or disposition of the whole building. Architects generally choose the semi-diameter of the bottom of the column for their Module, and this they subdivide into parts or minutes. The Module of Vignola, which is a semi-diameter, is divided into twelve parts in the Tuscan and Doric, and into eighteen for the other orders. The Module of Palladio, Scamozzi, M. Cambray, Desgodetz, Le Clerc, &c. which is also equal to the semi-diameter, is divided into thirty parts or minutes in all the orders. The whole height of the column is divided by some into twenty parts for the Doric, twenty two and a half for the Ionic, twenty-five for the Roman, &c. and one of these parts is made by a Module to regulate the rest of the building by. There are two ways of determining the measures, or proportions of buildings. The first is by a fixed standard measure, which is usually the diameter of the lower part of the column, called a Module, subdivided into sixty parts, called minutes. In the second there are no minutes, nor any certain or stated division of the Module, but it is divided occasionally into as many parts as judged necessary ; thus the height of the attic base, which is half the Module, is divided either into three, to have the height of the plinth, or into four, for that of the greater torus ; or into six, for that of the lesser. Both these manners have been practised by the ancient as well as the modern architects ; but the second, which was that chiefly used among the ancients, is, in the opinion of M. Perault the preferable. As Vitruvius has lessened his module in the Doric order, which is the diameter of the lower part of the other orders, and has reduced that great Module to a mean one, which is the semi-diameter, the Module is here reduced to the third part for the same reason, viz. to determine the several measures without a fraction. For in the Doric order, besides that the height of the base, as in the other orders, is determined by one of those mean Modules, the same Module gives likewise the height of the capital, architrave, triglyphs, and metopes. But our little Module, taken from the third of the diameter of the lower part of the column, has uses much more extensive ; for by this the height of the pedestals or columns and entablatures in all the orders are determined without a fraction. As then the great Module or diameter of the column has sixty minutes, and the mean Module, or half the diameter, thirty minutes, our little Module has twenty.

MOLE, is a massive work of large stones laid in the sea by means of coffer-dams, extending before a port, either to defend the harbour from

the impetuosity of the waves, or to prevent the passage of ships without leave.

MOLE-HEAD, a sort of pier, mound, or artificial isthmus, built athwart the outer part of a little bay, and joining to some head or island, to form a retreat for shipping.

MONOPTERE, in architecture, a kind of temple, round, and without walls, having a dome supported by columns.

MONUMENT, in architecture, a building destined to preserve the memory, &c. of the person who raised it, or for whom it was raised; such are a triumphal arch, a mausoleum, a pyramid, &c.

MOOR-STONE, a valuable stone much used in the coarser works of the present builders; being truly a white granite, of a marbly texture.

MORTISE, or **MORTOISE**, in carpentry, &c. a kind of joint, wherein a hole of a certain depth is made in a piece of timber, which is to receive another piece called a tenon.

MOSAIC-WORK, is an assemblage of little pieces of glass, marble, precious stones, &c. of various colours cut square, and cemented on a ground of stucco, in such a manner as to imitate the colours and degradations of painting. The materials used for these works are little pieces of glass of all the different shades in every tint or colour, like those of the fine English worsted used in needle-work. The glass is first cast into thin cakes, which are afterwards cut into long pieces of a different thickness. Many of the pieces used in the works on roofs and ceilings, which are consequently seen only at a great distance, appear to be a finger's breadth; but the finer works consists only of glass pins, if we may make use of that expression, not thicker than a common sewing needle, so that a portrait of four feet square shall take up two millions of such pins or studs. These pins are so closely joined together, that after the piece is polished, which is done in the same manner as looking-glasses are polished, it can hardly be discerned to be an arrangement of an infinite number of particles of glass; but rather looks like a picture painted with the finest colours, with crystal placed before it. The ground in which these vitreous pieces are inlaid, is a paste, compounded of calcined marble, fine sand, gum tragacanth, whites of eggs, and oil. It is at first so soft that the pieces are easily inserted, and upon an oversight may be taken out again, and the paste new moulded for the admission of other pins or studs; but by degrees it grows as hard as a stone, so that no impression can be made on the work. This paste is spread within a wooden frame, which, for large pieces, must not be less than a foot in breadth and thickness. This frame is fastened with brass tacks to a plate of the same metal, or to a stone slab; and as in capital pieces, which are often twenty feet by fifteen; this paste-ground must be above three quarters of a foot deep, and the pins or studs as long, it
may

may easily be conceived of what weight such a piece must be. The pieces designed for roofs, or any distant place, are not polished; but in the altar-pieces, &c. nothing is wanting to give them the most beautiful and splendid appearance. A piece of about eighty feet square, if performed with tolerable care and delicacy, will employ eight artists for the space of two years. The studs of the several colours lie ready before the artists in cases, as the letters are laid before the compositors in a printing-house: and such is their accuracy in imitating the finest strokes of the pencil, that the only apparent difference betwixt the original painting and such a copy is, that the latter has a much finer lustre, and the colours are more vivid.

Method of performing MOSAIC-WORK of marble and precious stones.—The ground of Mosaic-works wholly marble, is usually a massive marble, either white or black. On this ground the design is cut with a chissel, after it has been first calqued. After it has been cut of a considerable depth, i. e. an inch or more, the cavities are filled up with marble of a proper colour, first fashioned according to the design, and reduced to the thickness of the indentures with various instruments. To make the pieces thus inserted into the indentures cleave fast, whose several colours are to imitate those of design, they use a stucco composed of lime and marble-dust; or a kind of mastic, which is prepared by each workman after a different manner peculiar to himself.

The figures being marked out, the painter or sculptor himself draws with a pencil the colours of the figures, not determined by the ground, and in the same manner makes strokes or hatchings in the place where shadows are to be; and after he has engraven with the chissel all the strokes thus drawn, he fills them up with a black mastic, composed partly of Burgundy-pitch poured on hot; taking off afterwards what is superfluous with a piece of soft stone or brick, which, together with water and beaten cement, takes away the mastic, polishes the marble, and renders the whole so even, that one would imagine it only consisted of one piece.

This is the kind of Mosaic-work that is seen in the pompous church of the Invalids at Paris, and the fine chapel at Versailles, with which some entire apartments of that palace are incrustated.

As for Mosaic-work of precious stones, other and finer instruments are required than those used in marble; as drills, wheels, &c. used by lapidaries and engravers on stone. As none but the richest marbles and stones enter this work, to make them go the further they are sawn into the thinnest leaves imaginable, scarce exceeding half a line in thickness; the block to be sawn is fastened firmly with cords on the bench, and only raised a little on a piece of wood, one or two inches high. Two iron pins, which are on one side the block, and which serve to fasten it,

are put into a vice contrived for the purpose, and with a kind of saw or bow, made of fine brass wire, bent on a piece of spongy wood, together with emery steeped in water; the leaf is gradually fashioned by following the stroke of the design made on paper, and glued on the piece. When there are pieces enough fastened to form an entire flower, or some part of the design, they are applied to the ground.

The ground which supports this Mosaic-work, is usually of free-stone. The matter with which the stones are joined together, is a mastic, or kind of stucco, laid very thin on the leaves as they are fashioned; and this being done, the leaves are applied with plyers.

If any contour, or side of a leaf be not either squared or rounded sufficiently, so as to fit the place exactly into which it is to be inverted, when it is too large, it is brought down with a brass file or rasp; and if it be too little it is managed with a drill and other instruments used by lapidaries.

Mosaic-work of marble is used in large works, as in pavements of churches, basilicks, and palaces; and in the incrustation and vaneering of the walls of the same edifices.

As for that of precious stones, it is only used in small works, as ornaments for altar-pieces, tables for rich cabinets, precious stones being so very dear.

MOSQUE, is a temple or place of religious worship, among the Mahometans. All Mosques are square buildings, generally built with stone; before the chief gate there is a square court, paved with white marble, and low galleries round it, whose roof is supported by marble pillars. In these galleries the Turks wash themselves before they go into the Mosque. About every Mosque there are six high towers, called minarets, each of which has three little open galleries, one above another; these towers, as well as the Mosques, are covered with lead, and adorned with gilding and other ornaments; and from thence instead of a bell, the people are called to prayer by certain officers appointed for that purpose.

MOULD, or MOLD, in the mechanic arts, &c. a cavity cut with a design to give its form or impression to some softer matter applied therein, of great use in sculpture, foundery, &c.

MOULDINGS, in architecture, projectures beyond the naked wall, column, wainscot, &c. the assemblage of which forms corniches, door-cases, and other decorations of architecture. Some Mouldings are square, others round, some are straight, others curved, &c. and some are plain, others carved, or adorned with sculpture, either hollowed or in relief, some again are crowned with a fillet, others are without, as the doucine, talon, ovolo, torus, scotia, astragal, gula, corona, &c.

A doucine is the cymatium, or that in which the hollow part has the greatest projecture; the talon is the ogee, in which the swelling part has the

the greatest projection. The ovolo is a quarter round swelling. The cavetto is a quarter round hollowed; the astragal is small and round, and has usually its fillet; the dentell represents teeth; the plinth is a plain squared surface, whose use is generally to support the base of a column.

Cornices, door-cases, and many other ornamental pieces, are formed out of a composition of Mouldings. All Mouldings in regular architecture may be reduced to three kinds, the rounded, the square, and the curved; and from a combination of these which are the principal ones, and an occasional mixture of the others, may be formed a great variety of beautiful pieces; but in Gothic architecture, we see fancy indulged at an extravagant rate to supersede the use of the ancient and natural Mouldings.

MULLER, a stone flat and even at the bottom, but round a-top, used for grinding of matters on a marble. The apothecaries use Mullers to prepare some of their testaceous powders, and painters for their colours, either dry or in oil.

MUNIMENT-HOUSE, a little strong room in a cathedral, college, or university, destined for keeping the seal, charters, &c. of such cathedral, college, &c.

MURAL ARCH, a wall, or walled arch, placed exactly in the plane of the meridian, for fixing a large quadrant, sextant, or other instrument, in order to observe the meridian altitudes of the heavenly bodies.

MUTULES, a term used by some to express what are more commonly called modillions, which are brackets or consoles. Others appropriate the word Mutule to these ornaments in the Doric order, and call the others only modillions.

N.

NAILS, in building, &c. small spikes of iron, brass, &c. which being driven into wood, serve to bind several pieces together, or to fasten something upon them. The several sorts of Nails are very numerous; as 1. Back and bottom nails, which are made with flat shanks to hold fast and not open the wood. 2. Clamp-nails, for fastening the clamps in building, &c. 3. Clasp-nails, whose heads clasping and sticking into the wood, render the work smooth, so as to admit a plane over it. 4. Clench-nails, used by boat and barge builders, and proper for any boarded buildings that are to be taken down; because they will drive without splitting the wood, and draw without breaking; of these there are many sorts. 5. Clout-nails, for nailing on Clouts to axle trees. 6. Deck-nails, for fastening of Decks in ships, doubling of shipping, and floors laid with planks. 7. Dog-nails, for fastening of hinges on doors, &c. 8. Flat points, much used in shipping, and are proper

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where there is occasion to draw and hold fast, and no conveniency of clenching. 9. Jobent Nails, for nailing thin plates of iron to wood, as small hinges on cup-board-doors, &c. 10. Lead Nails, for nailing lead, leather, and canvas to hard wood. 11. Port-Nails, for nailing hinges to the ports of ships. 12. Pound Nails, which are four square, and are much used in Essex, Norfolk and Suffolk, and scarce any thing else except for paleing. 13. Ribbing Nails, principally used in ship building, for fastening the ribs of ships in their places. 14. Rose Nails, which are drawn four square in the shank, and commonly in a round tool, as all common two-penny Nails are; in some countries all the larger sort of Nails are made of this shape. 15. Rother Nails, which have a full head, and are chiefly used in fastening rother-irons to ships. 16. Round-head Nails, for fastening on hinges; or for any other use where a neat head is required; these are of several sorts. 17. Scupper Nails, which have a broad head, and are used for fastening leather and canvas to wood. 18. Sharp Nails, these have sharp points and flat shanks, and are much used, especially in the West-Indies, for nailing soft wood. 19. Sheathing-Nails, for fastening sheathing-boards to ships. 20. Square-Nails, which are used for hard wood, and nailing up wall fruit. 21. Tacks, the smallest of which serve to fasten paper to wood; the middling for wool-cards, &c, and the larger for upholsterers and pumps. Nails are said to be toughened when too brittle, by heating them in a fire-shovel, and putting some tallow or grease among them. Nails are sold at six score to the hundred: in lathing, five hundred are usually allowed to a bundle of five feet laths, and six hundred to a bundle of six feet laths; in flooring, two hundred are sufficient for a square of flooring.

NAKED, is a term used to express the plain surface of a wall, column, or other part of a building, in distinction from the ornaments. Thus the Naked of a wall is the flat plain surface of the wall that receives the mouldings; and the Naked of a column is its bare surface.

NAVE, in architecture, the body of a church, where the people are disposed, reaching from the balluster, or rail of the choir, to the chief door.

NEWEL, in architecture, the upright post which a pair of winding stairs turn about.

NICHE, in architecture, a hollow sunk into a wall, for the commodious and agreeable placing of a statue. The ordinary proportion of a Niche is to have two circles in height and one in width; but M. Le Clerc makes their height something more, the excess being to compensate for the height of the pedestal or the statue. The hollow is semi-circular at bottom, that is, in its plan; and at top it terminate in a kind of canopy. Niches have frequently an impost, and an archivolt or head-band, and the canopy wrought and enriched in the manner of a shell. The breadth of the archivolt may be made equal to a sixth or seventh part of the Niche,
and

and the height of the impost to a fifth or sixth part of the same ; and the impost and archivolt ought to consist of such mouldings as have some relation to the architecture of the place. Niches are sometimes made with rustic-work, sometimes with shell-work, and sometimes of cradle or arbour-work. Niches are sometimes made square, but these want all the beauty of the others.

NUDITIES, in painting and sculpture, those parts of an human figure not covered with any drapery, or those parts where the carnation appears.

O.

OBELISK, in architecture, a truncated quadrangular, and slender pyramid, raised as an ornament, and frequently charged either with inscriptions or hieroglyphics. Obelisks appear to be of very great antiquity, and to be first raised to transmit to posterity precepts of philosophy, which were cut in hieroglyphical characters ; afterwards they were used to immortalize the great actions of heroes, and the memory of persons beloved. The first Obelisk mentioned in history was that of Rameses, king of Egypt, in the time of the Trojan war, which was forty cubits high. Phius, another king of Egypt, raised one of forty-five cubits ; and Ptolemy Philadelphus, another of eighty-eight cubits, in memory of Arsinoe. Augustus erected one at Rome in the Campus Martius, which served to mark the hours on an horizontal dial, drawn on the pavement. They were called by the Egyptian priests the fingers of the sun, because they were made in Egypt, also to serve as styles, or gnomons, to mark the hours on the ground. The Arabs still call them Pharoah's needles, whence Italians call them *aguglia*, and the French *aiguilles*. The proportions in the height and thickness are nearly the same in all Obelisks ; their height being nine, or nine and a half, and sometimes ten times their thickness ; and their diameter at the top never less than half, and never greater than three-fourths of that at the bottom.

OFFICE, in architecture, in the plural denotes all the apartments appointed for necessary occasions of a palace or great house as kitchens, pantries, confectionaries, &c.

OGEE, or as it is sometimes written O. G. a moulding, part swelling and part hollowed, so that its outlines resembles a wave. When placed with the hollow part upward, it is called the upright Ogee, *cima recta*, or *cymasium* ; when the swelling part is upwards, it is called an inverted Ogee, *a flat*, and *cima inversa*.

ORDER, a column entire, consisting of base, shaft, capital, and entablature, and proportioned to the use or service for which it is intended. This is what is properly called an Order of architecture, and the several

uses and services requiring some distinction in strength, there have been contrived five kinds of these columns, three originally by the Greeks, the Doric, Ionic, and Corinthian, and two added by the Romans, the Tuscan, and the Composite. Each of these has its ornaments as well as general fabric proportioned to its strength and use; and these are the five Orders, the proper understanding of which is the great article in the elegance of building. Beginning from the plainest and the strongest, these are reckoned thus: 1. The Tuscan. 2. The Doric. 3. The Ionic. 4. The Corinthian; and 5. The Composite.

The Tuscan is the most simple and strong, the column has seven diameters in height, and the capital, base, and entablature, have no ornaments, and but few mouldings.

The Doric has the column seven and a half or eight diameters high; it has no ornaments on the base or capital, but its frieze is decorated with channelled figures, called triglyphs, placed at such a distance as to leave square spaces between them. These square spaces are called metopes, and are sometimes plain, and sometimes ornamented with heads of beasts, and other figures.

The Ionic order has the column nine diameters in height; its capital has volutes, which are a kind of scrolls, and there are plain modillions in the cornice.

The Corinthian order has its column nine diameters and a half high; its capital is ornamented with two rows of leaves, and among these rise up stalks which curl round under the abacus, and represent, in some measure, the volutes of the Ionic, but they are smaller and more numerous; and the entablature of this order has modillions under the cornice.

The Composite order has its column half a diameter higher than the Corinthian, that is, ten diameters, but some make it more, and some less; and its capital has leaves, and above them the volutes of the Ionic order. Its cornice has modillions.

These are the five great Orders of architecture; what is said of them here will give some general idea of their form, and their several parts are described more at large under the articles of base, capital, &c. But beside these, there are some other manners and forms of building called by the name of Orders.

The Persian Order has men slaves in the place of columns to support the entablature; the Caryatic Order has women; the Attic Order has pilasters in the place of regular columns. The Rustic Order is that adorned with rustic quoins, and the like decorations. The French Order has a capital composed of cocks heads and flower-de-luces; its proportions are those of the Corinthian, from which it differs only in the ornaments of the capital. There is also a Spanish Order, which is like the Corinthian in most things, but has a lion's head instead of a rose in the centre of the

abacus. But these, though honoured with the names of orders, very little deserve such a title: the orders in architecture might be multiplied innumera-ly on this plan, but there goes something more to the construction of what deserves that name.

In good architecture every part means something. We have seen, in another place, what the design of the Corinthian capital was; it represents a basket covered with a tile, and surrounded with leaves of the acanthus. Leaves of a plant may surround a basket naturally as it stands upon the ground, or elsewhere, but cocks heads and the like cannot. The original orders have something great and noble in them, but there is nothing but quaintness and fancy ill employed in these.

Disposition of the Orders. Those ought to be so disposed in building, that the most solid may be placed undermost, as the most proper to sustain the weight, and to give the whole edifice a more firm foundation: therefore the Doric must always be placed under the Ionic, the Ionic under the Corinthian, and the Corinthian under the Composite. As to the Tuscan, being a plain rude order, it is seldom used above ground, except in villas, where one order only is employed. In very large buildings, as amphitheatres, where many orders are required, the Tuscan may be placed under the Ionic instead of the Doric. But if you are desirous to leave out one of these orders, as for instance, to place the Corinthian immediately over the Doric, you may, provided you always observe to place the most strong and solid undermost, for the reasons above-mentioned.

These Orders took their names from the people among whom they were invented. Scamozzi calls the Tuscan, the gigantic; the Doric, the Herculean; the Ionic, the matronal; the Composite, the heroic; and the Corinthian, the virginal.

ORDONNANCE, in architecture, is a term used by some to express the same as order; but, in its general sense, it means the composition of a building, and the disposition of its several parts; it being this that determines the bigness of the several portions of which a building is composed, and the proper and judicious arrangement of them. In painting, it is used for the disposition of the parts of a picture, either respecting the whole piece, or to the several parts; as the groups, masses, contrasts, aspects, &c.

ORNAMENTS, in architecture, are used to signify all the sculpture or carved-work wherewith a piece of architecture is enriched.

ORTHOGRAPHY, in architecture, the elevation of a building. This Orthography is either external or internal. The external Orthography is taken for the delineation of an external face or front of a building; or, as it is by others defined, the model, platform, and delineation of the front of a house, that is contrived, and to be built, by the rules of geometry, according to which pattern the whole fabric is erected and finished.

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This delineation or platform exhibits the principal wall, with its apertures, roof, ornaments, and every thing visible to an eye placed before the building. Internal Orthography, which is also called a section, is a delineation, or draught of a building, such as it would appear, were the external wall removed. Orthography in perspective, is the front or fore view of any plane; that is, the side or plane that lies parallel to a straight line, which may be imagined to pass through the outward convex point of the eye, continued to a convenient length.

OVOLO, or OVUM, in architecture, is a round moulding, whose profile or sweep, in the Ionic or Composite capitals, is usually a quadrant of a circle; whence it is also commonly called the quarter round, and from the carving with which it is usually decorated, the egg and anchor. It is common on the richer orders, and about chimney-pieces, and other decorated parts of a building, and, when carved, has eggs in a kind of case, with anchors between. It is also called the echinus, the ove, and by several other names expressive of its form or decoration.

OUT-HOUSES, such as belong and are adjoining to dwelling-houses.

P.

PALACE, in architecture, is a name generally given to the dwelling-houses of kings, princes, bishops, and other great personages; and taking different epithets, according to the quality of the inhabitants, as imperial palace, royal palace, pontifical palace, cardinal palace, ducal palace, episcopal palace, &c.

PALING, a sort of fencing for fruit-trees planted in the fields, wherein three small posts are erected at a foot and a half distance one from another, and near the top nailed to each other with cross-bars.

PALLET, among painters, a little oval piece of wood, &c. very thin and smooth; on which they place the colours they have occasion for, ready for the pencil; it has a hole at one end, to put the thumb through, to hold it. Pallet in gilding, is an instrument made of a squirrel's tail, to take up the gold leaves from the pillow, and to apply and extend them on the matter to be gilt.

PANNEL, in joinery, a tympanum or square piece of thin wood, sometimes carved, framed, or grooved in a larger piece, between two upright pieces and two cross pieces.

PARAPET, is a little wall raised breast high on a terrace or building. The Parapet may be of brick or wood, a wall, or a rail, and may serve as an enclosure, as well as defence. The word is derived from the Italian parapetto, which signifies a defence to save the body, breast high; or a wall raised to the height of the breast. In military architecture, a Para-

per expresses a wall, or other defence, six or seven feet high, to defend the soldiers from the enemy. This is also called a skreen. They are made of earth or stone.

PAVEMENTS a layer of stone, or other matter, serving to cover and strengthen the ground for the more commodious walking on.

PAVILLION, in architecture, a kind of turret or building usually insulated, and contained under a single roof; sometimes square, and sometimes in form of a dome; thus called from the resemblance of its roof to a tent. We have presented our readers with the plan and elevation of an elegant design for a new harmonic Pavillion.

PEDESTAL, in architecture, is a square body of stone or other materials raised to set a column upon, or for some like occasion. When Pedestals are for columns, they should, according to Vignola, be of one third of the height of the column; but there is a great deal of difference in the determinations of authors upon that head. A Pedestal consists of three parts, the base, the die, and the cornice called its cap. There is in this a resemblance of the structure of columns, the base answers to the base of the column, the die to the shaft, and the cornice to its capital. Pedestals may be used to support columns of the different orders, and they must differ on this occasion according to the order they support. The Pedestal for the Tuscan order is the plainest; its base is only a square piece, or sub plinth. The Doric Pedestal is the same with the Tuscan, but that it has the addition of a base and cap. The Ionic is like the Doric, only the members are more, and a little enriched. The Corinthian Pedestal has its plinth, a carved torus, its listell, and cymasium; then the listell and ogee. The die is plain; its cornice consists of an ogee, a listell, an ovolo, corona, ogee, and listell.

The Composite Pedestal consists of the following parts; its base has a plinth, and a carved torus over that, then a reglet, an ogee inverted and enriched, and an astragal. The die is plain. The cornice consists of an astragal and cymasium, a list, cymasium, and a fillet; a corona, and an ogee, and its fillet. In the Doric Pedestals the pannels of the die should be in relievo, or projecting; in the other orders they should be hollowed, or in cruex; this is an article of striking propriety, but the architects too often neglect or mistake it. A square Pedestal is that whose breadth is equal to its height. A double Pedestal is that which supports two columns, its being greater than its height. A continued Pedestal is that which supports a row of columns, without any interruption or break.

Pedestals are much more used in modern than they were in ancient architecture; and those of a very nice taste are for banishing them entirely from under columns. They say they were made for statues, and should be put to no other use, and that although Vitruvius has adopted to every order its particular Pedestal, yet that columns of every order are better without

without them. Indeed a column never appears to stand so firm as when it rests upon the pavement. If we examine such works as have no Pedestals to the columns, we shall find a look of solidity and composure in them which the others want. A column always seems less when on a Pedestal.

PEDIMENT, in architecture, an ornament properly of a low triangular figure, crowning the front of a building, and serving often also as a decoration over doors, windows, and niches. Though the original and natural form of the Pediment be triangular, it is sometimes made a segment of a circle, and sometimes broke to let in busts or figures. The Pediments of churches are often beautifully adorned in basso, or alto rilievo; in the Pediment of the Parthenion at Athens, there are figures which stand quite free; the Pediment of our St. Paul's church is ornamented with the conversion of that saint, in which the light has proved a very difficult thing to express in stone-work. The Pediment consists of its tympanum and cornice; the tympanum is the pannel on which these figures are represented, which is often left plain. The cornice crowns this tympanum; the most beautiful Pediments are those where the height is about a fifth or two-ninths of the measure of the base. Sometimes the Pediment is formed of two scrolls, or brackets, and open in the middle; the tympanum of the Pediment is sometimes cut out, and sometimes a smaller Pediment is enriched in it.

Pediments being representations of the ridge of the roof, ought not to be placed lengthwise, but always cross-wise of a building. A Pediment no where looks so well as in the portal of a church, and that for this plain reason, that it is there always natural, and in the proper position. The triangular shape is for the same reason best for Pediments, because it is the natural form of a roof. An arched Pediment is not, nor can be, the representation of a pointed roof; and a broken Pediment takes from the idea of the use; there must be supposed to be another covering or roof within. Pediments placed one upon another, or one over another, as we see in some modern buildings, are very erroneous; the Pediment represents a roof, we should never put one roof over another; why then should we put the representation of it in one Pediment over another? It is unnatural in that representation, because it would be preposterous in the reality, and nothing that is unnatural can be beautiful. The Pediment is for the same reason always to stand above the entablature; one would think this rule so obvious that it need not be named; but that we see it sometimes transgressed. When a Pediment is put beneath an entablature, it represents a roof under a floor, than which nothing can be more contrary to reality. The Pediments over doors and windows may be deemed errors in this kind, they suppose so many roofs; but they are ornamental.

PENCIL,

PENCIL, an instrument used by painters for laying on colours. Pencils are of various kinds, and made of various materials.

PERIPTERE, a term used by the ancient architects and adopted by the moderns, to express a building encompassed round with columns. The word is derived from the Greek. These columns formed a kind of isle all round the building. A building that had columns only before was called a prostyle, and one that had none at the sides, only before and behind, was called an amphiprostyle; but when the columns were on all four sides it was called a Periptere; in the Periptere the columns should be distant from the wall by the measure of one intercolumniation. The portico of Pompey, the basilic of Antonine, and the mausoleum of Severus, were Periptere buildings.

PERRON, in architecture, the steps in the front of a building, raised before the doors of great houses, and leading to the first story, when raised above the level of the ground.

PIER, in architecture, is a square pillar without any regular base or capital. The Pier is sometimes free, sometimes in part immersed in a wall; what the pillar is to the column, the Pier is to the pilaster; each resembles the other, but is not tied down to that regularity prescribed by the proportions of the several orders. Piers often have niches, and serve as ornaments in front of buildings; there is a very beautiful pair that stand in front of Holland house, the work of Inigo Jones. Pier is also used to express a mass of stone work, raised against the force of the sea, for the security of ships in a harbour, and for the supports of the arches of a bridge.

PILASTER, in architecture, a square column sometimes insulated, but more frequently let within a wall, and only shewing a fourth or fifth part of its thickness. The Pilaster is different in different orders, it borrows the name of each, and has the same proportions, and the same capitals, members, and ornaments with the columns themselves. Pilasters are, however, usually made without either swelling or diminution, and as broad at top as at the bottom, though some of the modern architects, as M. Mansard, &c. diminish them at the top, and even make them swell in the middle, like columns, particularly when placed behind columns. M. Perrault observes, that Pilasters, like columns, become of different kinds, according to the different manner in which they are applied to the wall. Some are wholly detached, and these Vitruvius calls *parastata*; others have three faces clear out of the wall; others two; and others only one; these Vitruvius calls *antæ*. Insulate Pilasters are but rarely found in the antique; for the chief use the ancients made of them, was to give the greater strength to the extremities of porticoes.

There are four things to be principally regarded in Pilasters; their projection out of the wall; their diminution; the disposition of the enta-

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blature,

blature, when it happens to be common to them and to a column; and their flutings and capitals. 1. The projecture of Pilasters that have only one face out of the wall, ought to be one-eighth of their breadth, or at most one sixth; but when they receive imposts against their sides, the projecture may be a quarter of their diameter. 2. Pilasters are seldom diminished when they have only one face out of the wall; indeed when they stand in the same line with columns, and the entablature is continued over both, without any break, the Pilasters are to have the same dimensions with the columns. 3. Pilasters are sometimes fluted, though the columns that accompany them are not so; and on the contrary, the columns are sometimes fluted, when the Pilasters that accompany them are not. The flutings of Pilasters are always odd in number, except in half Pilasters, which meet at inward angles, where four flutings are made for three, &c. 4. The proportions of the capitals of Pilasters, are the same as to height with those of columns; but they differ in breadth, the leaves of Pilasters being much broader, because Pilasters, though of equal extent, have only the same number of leaves for their girt, viz. eight. Their usual disposition is to have two in each face, in the lower row, one in the middle, and two halves in the angles, in the turns of which they meet. Add to this, that the rim of the vase, or tambour, is not straight, as the lower part is; but a little circular and prominent in the middle.

In Pilasters that support arches, the proportions, according to Palladio, should be regulated by the light they are placed in; and at the angles by the weight they are to sustain; they must not be too tall and slender, lest they resemble pillars, nor too dwarfish and gross, lest they appear like the piers of bridges. In private buildings they ought not to be narrower than one-third, nor broader than two-thirds of the vacuity, or interspace between Pilaster and Pilaster; but as for those that stand at the corners, they may have a little more latitude allowed them, to give the greater strength to the angles. Palladio observes, that in the theatres and amphitheatres, and such massive works, they have been as broad as the half, and sometimes as the whole vacuity or interspace. He also asserts, that their true proportion should be an exact square; but for lessening of expence, they are usually made narrower in flank than in front.

PILE, in building, is a large stake rammed into the ground in the bottom of rivers, or in marshy land, for a foundation to build on. The word is used among architects for a mass of building.

PILLAR, in architecture, a column of an irregular make, not formed according to rules, but of arbitrary parts and proportions; free or disengaged from the wall in every part, and always deviating from the measures of any of the orders of regular columns. This is the distinction of the Pillar from the column. The column in our churches of the Italian archi-

architecture is always of one of the orders; the Pillar in the Gothic buildings is often vastly too high for its thickness, and has no diminution. This irregularity of structure makes it a Pillar, while the just proportions of the others entitle them to the names of columns.

These Pillars, as they are without proportion in their parts, so they want proportion with respect to the building: we constantly see them either too thick, or too slender, and commonly extravagantly in one of these extremes or the other. The eye is at once a judge of this disproportion, even when the person who views them has not in the least considered architecture, always approving the column, and disapproving the Pillar.

There are buildings about London in which the architect has deviated so far from rule in his columns, that they cannot be said to belong to any order, and may be better called Pillars.

PINNING, in building, the fastening of tiles together, with pins of heart of oak, for the covering of an house, &c.

PLAN, the term Plan is particularly used for a draught of a building, such as it appears, or is intended to appear, on the ground; shewing the extent, division, and distribution of its area, or ground plot, into apartments, rooms, passages, &c. A geometrical Plan is that wherein the solid and vacant parts are represented in their natural proportions. The raised Plan of a building is the same with what is otherwise called an elevation or orthography. A perspective Plan is that exhibited by degradations, or diminutions, according to the rules of perspective.

To render Plans intelligible, it is usual to distinguish the massives with a back wash; the projectures on the ground are drawn in full lines, and those supposed over them in dotted lines. The augmentations, or alterations to be made, are distinguished by a colour different from what is already built; and the tints of each Plan made lighter, as the stories are raised. In large buildings, it is usual to have three several Plans, for the three first stories.

PLASTER, among builders, &c. The Plaster of Paris is a preparation of several species of gypsums, dug near Mont Maitre, a village in the neighbourhood of Paris; whence the name. The best sort is hard, white, shining, and marbly; known by the names of plaster-stone, or parget of Mont Maitre. It will neither give fire with steel, nor ferment with aquafortis, but very freely and readily calcines in the fire, into a very fine Plaster; the use of which in building and casting statutes is well known.

As the modern taste runs greatly into plaistering, it were to be wished that this art could be brought to its ancient perfection. The plasters of the Romans were exceeding durable; witness several yards of it still to be found on the top of the Pont de Garde, near Nîmes. At Venice they use a very durable Plaster; but as the secret of preparing it is not known

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among us, it would be worth while to try whether such a substance might not be made by boiling the powder of gypsum dry over the fire, for it will boil in the manner of water; and when this boiling or recalcining was over, the mixing with it resin, or pitch, or both together, with common sulphur, and the powder of sea-shells. If these were all mixed together, and water added to it hot, and the matter all kept hot upon the fire till the instant of its being used, so that it might be laid on hot, it is possible this secret might be hit upon. Wax and oil of turpentine may also be tried as additions; these being the common ingredients in such cements as we have accounts of are the firmest. Strong ale-wort is by some directed to be used, instead of water, to make mortar of lime-stone be of more than ordinary strength. It is possible that the use of this tenacious liquor in the powdered ingredients of this proposed Plaster, might greatly add to their solidity and firmness.

PLASTICE, the plastic art, a branch of sculpture, being the art of forming figures of men, birds, beasts, fishes, &c. in plaster, clay, stucco, or the like.

PLATBAND, in architecture, a square moulding which has less projection than height or breadth. The faces of an architrave are Platbands. The Platbands of flutings are the lifts or fillets, which separate those hollows on the shafts of columns. The lintell of a door or window, when it is square, or not much arched, is called the Platband of the door, or Platband of the window. Any flat square moulding, if not too projecting, is called by this name.

PLATFORM, in architecture, a row of beams, which support the timber-work of a roof, and lie on the top of the wall, where the entablature ought to be raised. This term is also used for a kind of terrace, or broad, smooth, open walk at the top of the building, from whence a fair prospect may be taken of the adjacent country. Hence an edifice is said to be covered with a Platform, when it is flat at top, and has no ridge; like the late Duke of Newcastle's house, in Lincoln's Inn Fields. Most of the oriental buildings are thus covered, as were all those of the ancients.

PLINTH, in architecture, a square piece which is placed under the mouldings in the bases of columns. The Plinth terminates the column with its base at the bottom, as the abacus does with its capital at the top. And the abacus in the Tuscan order being plain, square, and massy, has been called the Plinth of that capital. It seems to have been originally intended to keep the bottom of the original wooden pillars from rotting. Plinth of a statue, &c. is a base, either flat, round, or square, that serves to support it.

PLUMMET, **PLUMB-RULE**, or **PLUMB-LINE**, an instrument used by carpenters, masons, &c. in order to judge whether walls, &c. be upright planes, horizontal, or the like. It is thus called from a piece of lead

lead, *plumbum*, fastened to the end of a cord, which usually constitutes this instrument. Sometimes the string descends along a wooden ruler, &c. raised perpendicularly on another, in which case it becomes a level.

PORCH, in architecture, a kind of vestibule supported by columns, much used at the entrance of the ancient temples, halls, churches, &c. Porch in antient architecture, was a vestibule, or a disposition of insulated columns, usually crowned with a pediment, forming a covert place before the principal door of a temple, or court of justice. Such is that before the door of St. Paul's Covent Garden, the work of Inigo Jones.

PORTAIL, a term used by many writers to signify the same as the frontispiece of a building. The decoration of a face, or front, of a church is called the Portail. The same word is also used by some to signify the principal gate of a palace, or castle; as also for the whole face of a church, including the great door.

PORTAL, a word used to express a smaller gate, where there are a larger and a smaller; some use it at random for the gate where there is only one. It is also used to express an arch over a door-way; and formerly it signified a square corner of a room, cut off from the rest, for the door or entrance.

PORTICO, in architecture, a place for walking under shelter, raised with arches, in the manner of a gallery. The Portico is usually vaulted, but it has sometimes a soffit, or ceiling. The Portico is a piazza encompassed with arches raised upon columns, and covered over head in any manner. The word seems to refer to the gate or entrance of some place, *porta* in Latin signifying a gate; but it is appropriated to a disposition of columns, forming this kind of gallery, and has no relation to the openings.

POSTURE, in painting and sculpture, the situation of a figure with regard to the eye, and of the several principal members thereof, with regard to each other, whereby its action is expressed.

PROFILE, in architecture, the draught of a building, fortification, &c. wherein are expressed the several heights, widths and thickneses, such as they would appear were the building cut down perpendicularly from the roof to the foundation. It is also called section, or orthographical section, and by Vitruvius, *sciagraphy*. This is the same as elevation, in opposition to a plan, which is called *ichnography*. It also denotes the outline of a figure, building, member of architecture, &c. Hence profiling sometimes denotes designing or describing the member with a rule, compass, &c. Profile in sculpture and painting, denotes a head, portrait, &c. when represented sidewise, or in a side-view. On almost all medals, faces are represented in Profile.

PROJECTURE, in architecture, signifies the prominency, or jetting out, of ornaments from the bare surface or naked of the wall or column; thus mouldings are said to have so much projecture as is their distance at

the thickest part from the surface of the wall or column to which they are fixed. The word is derived from the Latin *projecta*, which signifies thrown forward. In entire cornices the Projecture should be always equal to the height; this is a maxim of Vitruvius, but it has been so misunderstood, that he was supposed to mean, that the Projecture of every moulding should be equal to its height. The Projecture of the bases and cornices of pedestals is greater in the antique than in the modern works: the difference in general is about one-third. The word is always applied to galleries, balconies, &c. which jet out beyond the face of the wall.

PROPORTION, in architecture, the relation which the several members of a column, or other part of a building, have to the whole of that column, or part; and which that column, or part, has to the edifice. When we say such a column is proportioned, it is meant that it is well proportioned, and so of any other part or member. The same term is used also to signify the different bigness which the members of architecture and figures ought to have, with regard to the distances from which they are severally to be seen. There is no Proportion about which authors vary so much, as that of the height of entablatures, with respect to the thickness of columns.

PROTHYRUM, in architecture, a porch at the outer door of a house.

PROSTYLE, in architecture, a temple that had a range of columns in the front, but was not surrounded, or winged by them.

PULVINATED, a term used to express the swelling or rounding of the freeze in the Ionic order. The word is derived from the Latin *pulvinatus*, pillowed, or cushioned.

PUNCHEON, in carpentry, is a piece of timber placed upright between two posts, whose bearing is two great, serving, together with them, to sustain some large weights.

PURLINS, in building, those pieces of timber that lie across the rafters on the inside, to keep them from sinking in the middle of their length.

PUTLOGS, or PUTLOCKS, in building, are short pieces of timber about seven feet long, used in building scaffolds. They lie at right angles to the wall, with one of their ends resting upon it, and the other upon the poles which lie parallel to the side of the wall of the building.

PYCNOSTYLE, in the ancient architecture, is a building where the columns stand very close to each other; only one diameter and a half of the column being allowed for the intercolumniations. According to Mr. Evelyn, the Pycnostyle chiefly belonged to the Composite order, and was used in the most magnificent buildings; as at present in the peristyle at St. Peter's at Rome, which consists of near three hundred columns; and in such as yet remain of the ancients, among the late discovered ruins of Palmyra.

PYRAMID,

PYRAMID, in architecture, a solid massive building, which from a square, triangular, or other base, rises diminishing to a vertex or point. Pyramids are sometimes used to preserve the memory of singular events; and sometimes to transmit to posterity the glory and magnificence of princes. But as they are esteemed a symbol of immortality, they are most commonly used as funeral monuments. Such is that of Cestius at Rome, and those other celebrated ones of Egypt, as famous for the enormity of their size, as their antiquity. These are situated on the west side of the Nile almost opposite to Grand Cairo: the base of the largest covers more than ten acres of ground, and is, according to some, near seven hundred feet high, though others make it six hundred, and some little more than five hundred. The Pyramid is said to have been, among the Egyptians, a symbol of human life, the beginning of which is represented by the base, and the end by the apex; on which account it was, that they used to erect them over sepulchres. Pyramids are always solid and massy edifices. A Pyramid with a very small or narrow base is called an obelisk.

Q.

QUADRA, in architecture, a name given by Vitruvius to the square piece, commonly called the socle, serving to support the pedestals of statues, vases, and other ornaments. It has this name from its square figure.

QUARRY, a place under ground, from whence are taken marble, free-stone, slate, lime stone, or other matters proper for buildings. Quarries of free-stone are in many places opened, and the stone brought out, in the following manner; they first dig a hole in the manner of a well, twelve or fourteen feet in diameter, and the rubbish drawn out with a windlass in large osier baskets, they heap up all around, placing their wheel, which is to draw up the stones, upon it. As the hole advances, and their common ladder becomes too short, they apply a particular ladder for the purpose. When they have got through the earth, and are arrived at the first bank or stratum, they begin to apply their wheel and baskets to discharge the stones as fast as they dig thro' them. In freeing the stone from the bed, they proceed thus; as common stones, at least the softer kinds, have two grains, a cleaving grain, running parallel with the horizon, and a breaking grain, running perpendicular thereto; they observe by the grain where it will cleave, and there drive in a number of wedges, till they have cleft it from the rest of the rock. This done, they proceed to break it, in order to which applying the ruler to it, they strike a line, and by this cut a channel with their stone axe; and in the channel, if the stone be three or four feet long, set five or six wedges, driving them in very carefully with gentle blows, and still keeping them equally forward. Having thus broken the stone in length,
which

which they are able to do of any size within half an inch, they apply a square to the straight side, strike a line, and proceed to break it in breadth. This way of managing stone is found vastly preferable to that where they are broken at random; one load of the former being found to do the business of a load and a half of the latter. But it may be observed, that this cleaving grain being generally wanting in the harder kinds of stones, to break up these in the Quarries, they have great heavy stone-axes, with which they work down a deep channel into the stone; and into this channel, at the top, lay two iron bars, between which they drive their iron wedges. Some, in dividing the stone, especially the very hard kinds, make use of gun-powder, with very good effect. In order to which, making a small perforation pretty deep in the body of the rock, so as to have that thickness of rock over it judged proper to be blown up at once, at the further end of the perforation they dispose a convenient quantity of gun-powder, filling up all the rest with stones and rubbish, strongly rammed in, except a small place for the train. By this means is the rock blown into several pieces, most of which are not too big to be managed by the workmen.

QUARTERS, in building, those slight upright pieces of timber placed between the puncheons and posts, used to lath upon. These are of two sorts, single and double: the single Quarters are sawn to two inches thick and four inches broad; the double Quarters are sawn to four inches square. It is a rule in carpentry, that no Quarters be placed at a greater distance than fourteen inches.

QUARTER-ROUND, in architecture, a term used by the workmen for any projecting moulding in general whose contour is a perfect quadrant of a circle, or which approaches near that figure.

QUINK, in building, a piece of ground taken out of any regular ground-plot, or floor: thus if the ground-plot were oblong or square, a piece taken out of a corner to make a court or yard, &c. is called a Quink.

QUOINS, in architecture, denotes the corners of brick, or stone walls. The word is particularly used for the stones in the corners of brick buildings. When these stand out beyond the brick-work, their edges being chamfered off, they are called rustic Quoins.

R.

RABETTING, in carpentry, the planing or cutting of channels or grooves in boards, &c. In ship carpentry, it signifies the letting in of the planks of the ship into the keel; which, in the rake and run of a ship, is hollowed away, that the planks may join the closer.

RAF-

RAFTERS, in building, pieces of timber, which standing by pairs on the reason or raising piece, meet in an angle at the top, and form the roof of a building. It is a rule in building, that no rafters should stand farther than twelve inches from one another. Principal rafters should be nearly as thick at the bottom as the beam, and should diminish in their length one fifth or one sixth of their breadth: the king-posts should be as thick as the principal rafters, and their breadth according to the bigness of those that are intended to be let into them, the middle part being left somewhat broader than the thickness.

RAIL, in architecture, denotes those pieces of timber which lie horizontally between the pannels of wainscot. It is also applied to those pieces of timber which lie over and under ballusters, in balconies, stair-cases, &c. as also from post to post in fences with pales or without.

RAISER, in building, a board set on edge under the fore-side of a step, stair, &c.

RAISING-PIECES, or **REASON-PIECES**, in architecture, pieces that lie under the beams, and over the posts or puncheons.

RAKING-TABLE, or **RARED-TABLE**, among architects, is a member hollowed in the square of a pedestal, &c.

RAMPART, in civil architecture, is used for the space left between the wall of a city, and the next houses.

RANGING, in building, signifies running straight, when the sides of a work do not break into angles.

REDUCT, in building, a quirk or little place taken out of a larger, to make it more uniform and regular; or for some other convenience, as for a little cabinet aside of a chimney, for alcoves, &c.

REGLET, in architecture, a flat narrow moulding, used chiefly in pannels and compartments, to separate the parts or members from one another, and to form knots, frets, and other ornaments.

REJOINTING, in architecture, filling up the joints of the stones in buildings.

RELIEVO, or **RELIEF**, in sculpture, &c. the projecture, or standing out of a figure, which arises prominent from the ground or plane on which it is formed; whether that figure be cut with the chissel, moulded or cast. There are three kinds or degrees of relievo, viz. alto, basso, and demi-relievo. The alto-Relievo, called also haut-Relief or high Relievo, is when the figure is formed after nature, and projects as much as the life. Basso-Relievo, bass-Relief, or low Relievo, is when the work is raised but a little from the ground, as in medals, and the frontispieces of buildings; and particularly in the histories, festoons, foliages, and other ornaments of friezes. Demi-Relievo is when one half of the figure rises from the plane. When, in a basso-Relievo, there are

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parts

parts that stand clear out, detached from the rest, the work is called *demi-basso*.

In architecture, the *Relievo* or projecture of the ornaments, ought always to be proportioned to the magnitude of the building it adorns, and to the distance at which it is to be viewed.

Relievo, or *Relief*, in painting, is the degree of boldness with which the figures seem, at a due distance, to stand out from the ground of the painting.

RESAULT, in architecture, is the effect of a body which either projects or sinks back; that is, stands more out or in, than another, so as to be out of the line or level with it.

RESEARCHING, in sculpture, the repairing of a cast figure, &c. with proper tools; or the finishing it with art and exactness, so as the minutest parts may be well defined.

RETURN, in building, is a side or part that falls away from the fore-side of any straight work.

RIDGE, in building, the highest part of the roof, or covering of a house, &c.

RING, in architecture, a name by which many call the list, cincture, or fillet, on columns, a narrow flat moulding.

Roof, in architecture, the uppermost part of a building. The Roof contains the timber-work, and its covering of slate, tile, lead, &c. though carpenters usually restrain the word to the timber-work only. The form of Roofs is various; sometimes it is pointed, in which case the most beautiful proportion is to have its profile an equilateral triangle: sometimes it is square, that is, the pitch or angle of the ridge is a right angle, which therefore is a mean proportion between the pointed and flat Roof, which last is in the same proportion as a triangular pediment: this is chiefly used in Italy, and the hot countries, where there is but little snow. Sometimes Roofs are made in the pinnacle form; sometimes they have a double ridge; and sometimes they are mutilated, that is, consist of a true and false Roof, which is laid over the former: sometimes again they are in the form of a platform, as most of the eastern buildings are; and sometimes they are truncated, that is, instead of terminating in a ridge, the Roof is cut square off at a certain height, covered with a terras, and encompassed with a ballustrade; and sometimes, again, a Roof is made in the manner of a dome. When the walls have been raised to their designed height, the vaults made, the joists laid, the stairs, &c. brought up, then the Roof is to be raised, which embracing every part of the building, and with its weight equally pressing upon the walls, is a band to all the work: and besides, defends the inhabitants from rain or snow, the burning heat of the sun, and the moisture of the night, and is of no
small

small advantage to the building, in casting off the rain water from the walls.

ROSE, in architecture, an ornament cut in the form of a Rose, chiefly used in cornices, friezes, vaults of churches, &c. and particularly in the middle of each face in the Corinthian abacus. In what is called the Spanish order, a lion's head is put in the place of the Rose, in the center of the abacus. It is to be observed, that the ancients always used a flower in this place, but they did not always represent a Rose or mean that flower, though we have a way of calling whatever we see there in old remains by that name. In the temple of Vesta the flower is composed of a number of narrow and pointed leaves, and has a large conic body in the center: in the campus Vaccinus there are three Corinthian columns, and the flower on the abacus is composed of broad indented leaves, and has a roundish body in the center, resembling a gooseberry; and in the basilic of Antonine the flower consists of a great number of narrow leaves very different in their lengths, and has a conic body in the center composed of three or four parts.

ROTUNDA, in architecture, an appellation given to any building that is round both within and without side, whether it be a church, salon, or the like: the Rotunda at Rome, called also the Pantheon, is famous, and the chapel of the Elscorial, which is the burying place of the kings of Spain, is of this form; as is also the Pantheon in Oxford Street.

RUDENTURE, in architecture, the figure of a rope or staff, sometimes plain, sometimes carved, with which the third part of the flutings of columns are frequently filled up.

RUDERATION, in building, a term used by Vitruvius for the laying of pavement with pebbles. To perform the Ruderation it is necessary that the ground be well beaten, to make it firm, and to prevent it from cracking; then a stratum of little stones is laid, to be afterward bound together with mortar made of lime and sand. If the sand be new, its proportion may be to the lime as three to one; if dug out of old pavement or walls, as five to two.

RUSTIC, in architecture, implies a manner of building in which every thing that is rough and coarse is affected to be used, and where an appearance of nature is more studied than the rules of art. When the stones in the face of a building are purposely cut and hacked into an irregular roughness, this is called Rustic work. Rustic work and Rustic quoins are commonly used in the basement part of a building.

SALON,

S.

SALON, or SALOON, in architecture, a great room intended for state, or for the reception of paintings, and usually comprehending two stories, or ranges of windows. Its place is in the middle of a house, or at the head of a gallery, and it is a kind of magnificent hall, spacious, and continued with symmetry on all its sides, and coved at the top. It may be square, oblong, or octagonal, or of other regular forms. The Salon at Blenheim house is a very fine one: the purpose for which these rooms were originally contrived was the reception of great visitors.

Saw, an instrument which serves to cut into pieces several solid matters, as wood, stone, ivory, &c. The best saws are of tempered steel, ground bright and smooth; those of iron are only hammer-hardened: hence the first, besides their being stiffer, are likewise found smoother than the last. They are known to be well hammered by the stiff bending of the blade; and to be well and evenly ground, by their bending equally in a bow. The edge in which are the teeth, is always thicker than the back, because the back is to follow the edge. The teeth are cut and sharpened with a triangular file, the blade of the saw being first fixed in a whetting block. After they have been filed the teeth are set, that is, turned out of the right line, that they may make the kerf or fissure the wider, that the back may follow the better. The teeth are always set ranker for coarse cheap stuff than for hard and fine, because the ranker the teeth are set the more stuff is lost in the kerf. The Saws by which marble, and other stones are cut, have no teeth. these are generally very large, and are stretched out and held even by a frame. The workmen who make the greatest use of the Saw, are the Sawyers, carpenters, joiners, cabinet-makers, ebonists, stone-cutters, carvers, sculptors, &c. But of all mechanics, none have so many Saws as the joiners; the chief are as follow; the pit-Saw, which is a large two-handed Saw, used to saw timber in pits; this is chiefly used by the sawyers. The whip Saw, which is also two-handed, used in sawing such large pieces of stuff as the hand Saw will not easily reach. The hand-Saw, which is made for a single man's use, of which there are various kinds; as the bow or frame-Saw, which is furnished with cheeks: by the twisted cords which pass from the upper parts of these cheeks and the tongue in the middle of them, the upper ends are drawn closer together, and the lower set further apart. The tennon-Saw, which being very thin, has a back to keep it from bending. The compass-Saw, which is very small, and its teeth usually not set; its use is to cut a round, or any other compass-kerf: hence the edge is made broad and the back thin, that it may have a compass to turn in.

SCAFFOLD,

SCAFFOLD, among builders, an assemblage of planks and boards, sustained by tressels and pieces of wood fixed in the walls whereon masons, bricklayers, &c. stand to work in building high walls, &c. and plasterers in plastering ceilings, &c. Scaffold also denotes a timber-work, raised in the manner of an amphitheatre, for the more commodious viewing any shew or ceremony; it is also used for a little stage, raised in some public place whereon criminals are executed.

SCALE, in architecture, a line divided into equal parts, placed at the bottom of a map, or plan, to serve as a common measure for all the parts of the building.

SCAPUS, a term used to express the shaft of a column; that part which is between the base and capital.

SCENOGRAPHY, in perspective, the representation of a body on a perspective plane; or description thereof in all its dimensions, such as it appears to the eye. The ichnography of a building, &c. represents its plan or ground-work; the orthography is a view of the front, or one of its sides; and the Scenography is a view of the whole building, front, sides, height, and all raised on the geometrical plan. To exhibit the Scenography of any body. 1. Lay down the basis, ground-plot, or plan of the body. 2. Upon the several points of the plan raise the perspective heights; thus will the Scenography of the body be completed, excepting that a proper shade is to be added.

SCOTIA, in architecture, the name of a hollow moulding principally used between the torus's of the base of columns, and somewhat resembling a large pulley. It is the same called by many trochilus, and the concave member. The Scotia has an effect just opposite to the quarter-round, and authors sometimes call it the casement.

SCRIBING, in joinery, &c. a term used when one side of a piece of stuff is to be fitted to another that is irregular. In order to make these join close all the way, they scribe it, that is, they lay the piece to be scribed close to the other they intend to scribe it to, and opening their compasses to the widest distance these two pieces stand from each other, they bear the point of one of the legs against the side they intend to scribe to, and with the other point draw a line on the staff to be scribed. Thus they form a line on the irregular piece parallel on the edge of the regular one; and if the staff be cut exactly to the line, when these pieces are put together, they will seem a joint.

SCULPTURE, an art which, by the means of a design or plan, and of solid matter, imitates the palpable objects of nature. Its matter is wood, stone, marble, ivory, different matters, as gold, silver, copper, precious stones, as agate and the like. This art includes, also, casting or founding, which is subdivided into the art of making figures of wax, and that of casting them in all sorts of metals. By Sculpture we understand

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here all those different species. The sculptors and painters have often had great disputes among themselves, upon the pre-eminence of their several professions; the first founding the preference upon the duration of their works, and the latter opposing them with the effects of the mixture and vivacity of colours. But, without entering into a question not easy to decide, Sculpture and painting may be considered as two sisters that have but one origin, and whose advantages ought to be common; we might almost say, as the same art, of which design is the soul and rule, but which work in a different manner, and upon different materials. It is difficult, and little important, to trace through the obscurity of remote ages, the first inventors of Sculpture. Its origin may be dated with that of the world, and we may say that God was the first statuary, when, having created all beings, he seemed to redouble his attention in forming the body of man, for the beauty and perfection of which he seems to have wrought with a kind of satisfaction and complacency. The first sculptors made their works of earth, whether they were statues, or moulds and models. This made the statuary Praxiteles say, that the works which were either cast, or cut with a chisel or graver, owed their being to the making of figures of earth, called *plastice*. It is said, that Demaratus, the father of Tarquinius Priscus, who took refuge from Corinth in Etruria, brought thither abundance of workmen with him, who excelled in that art, and introduced the taste for it there, which afterwards communicated itself to the rest of Italy. The statues erected in that country to the Gods, were at first only of earth, to which, for the whole ornament, was added a red colour. We ought not to be ashamed of the men, says Pliny, who adored such Gods. They set no value upon gold and silver, either themselves or their deities. We find that the ancients made statues of almost all sorts of wood. There was an image of Apollo at Sicyone made of box. At Ephesus, according to some writers, that of Diana was of cedar, as well as the roof of the temple. The lemon-tree, the cypress, the palm, the olive, the ebony, the vine, in a word, all trees not subject to rot, or to be worm-eaten, were used for statues. Marble soon became the most usual and most esteemed material for works of Sculpture. It is believed that Dipænes and Scyllis, both of Crete, were the first that used it at Sicyone, which was long, in a manner, the center and school of arts; they lived about the 50th Olympiad, a little before Cyrus reigned in Persia. Bupalus and Anthernus, two brothers, made themselves famous for the art of carving marble in the time of Hipponax, that is, in the 60th Olympiad. That poet having a very ugly face, they made his portrait, in order to expose it to the laughter of spectators. Hipponax conceived a more than poetic fury against them, and made such virulent verses upon them, that, according to some, they hanged themselves through grief

grief and shame. But this cannot be true, because there were works of their making after that time.

It is believed, that the manner of cutting large blocks of marble into many thin pieces, to cover the walls of houses, was invented in Cairo. The palace of king Mausolus, at Halicarnassus, is the most ancient house that had these incrustations of marble, which were one of its greatest ornaments. The use of ivory, in works of Sculpture, was known from the earliest ages of Greece. Homer speaks of them, though he never mentions elephants.

The art of casting in gold and silver is of the greatest antiquity, and cannot be traced to its origin. The Gods of Laban, which Rachael stole, seem to have been of this kind. The jewels offered to Rebecca were of cast gold. Before the Israelites left Egypt, they had seen cast statues, which they imitated in casting the golden calf, as they did afterwards in the brazen serpent. From that time all the nations of the East cast their gods, *deos conflantes*, and God forbid his people to imitate them upon pain of death. In the building of the tabernacle, the workmen did not invent the art of founding; God only directed their taste. It is said that Solomon caused the figures used in the temple, and elsewhere, to be cast near Jericho, because it was a clayey soil, which shews that they had even then the same manner of founding great masses as we have.

SEALING, in architecture, the fixing a piece of wood or iron in a wall, with plaster, mortar, cement, lead, and other solid binding. For staples, hinges, and joints, plaster is very proper.

SECTION of a Building, in architecture, is the same with its profile; or a delineation of its heights and depths raised on a plane, as if the fabric was cut asunder to discover its inside.

SELL, among builders, the lowest piece in timber-building, being that on which the whole superstructure is raised. It is also applied by some to the bottom part of a window frame.

SEPULCHRE, is a tomb or place destined for the interment of the dead. It is chiefly used in speaking of the burial places of the ancients: those of the moderns are usually called tombs.

SERAGLIO, among the oriental builders, the palace of a prince or lord, but it is used by way of excellence for the palace of the Grand Signior at Constantinople.

SESSPOOL, a well or deep hole sunk under the drain for the reception of sediment, and other gross matter: which, if not prevented, would choak and stop the drain. The direction to be given to the builder with respect to these Sesspools, is, that they be so contrived, that they may be cleaned at times without difficulty, for otherwise they would fill up, though ever so large, and then the evil would be communicated to the drains;

drains ; they would fill up the next, and all would take the same ill turn, as if the drains had originally been made too small.

SEWER, a drain, conduit, or conveyance, for carrying off water, soilage, &c. from a house, street, field, or the like. It is necessary that every house have conveniences for discharging its refuse water, and other useless and offensive matters ; these are obtained by digging and laying Sewers and drains at proper depths, and with the needful outlets. As to Sewers and drains, the great care is that they be large enough ; that they be placed deep enough, and have a proper descent ; that they be well arched over, and have so free a passage, that there be no danger of their choaking up ; the cleaning them being a work of trouble and expence.

Instead of making the bottom of the Sewer a flat floor, let it be in form of an inverted arch, answering in part to the sweep of the arch above. Every one knows that the freest passage that can be, is through circular channels, and these would sufficiently wear that form ; they would in a manner resemble so many vast water-pipes of a circular base, and there would be no danger of their filling up. The perpendicular walls would detain nothing, because there are no angles in their joining ; and the bottom being round and free, all would run off easily and as it should. The thickest water would pass such a drain, if it moved tolerably quick, without depositing any settlement ; and if, from a very slow motion, some small matter should lie at one time, it would be carried off by the next quantity that made its way through the drain. This method of constructing Sewers is used very successfully under the building of the horse-guards.

SHAFT, in architecture, is a term used to express that part of a column which is between the base and capital ; this is in a manner the whole column, and is called also the fust, the trunk, or the body of the column.

SHANK, in architecture, a name given to the two interstitial spaces between the channels of the triglyph in the Doric freeze ; they are sometimes called legs of the triglyph.

SHINGLES, among builders, small pieces of wood, in the form of wedges, four or five inches broad, and eight or nine long. They are used instead of tiles or slates for covering the roofs, &c. of buildings.

SLAB, an outside sappy plank or board sawed off from the sides of a timber-tree ; the word is also used for a flat piece of marble.

SLATE, a bluish fossil stone, very soft when dug out of the quarry, and therefore easily cut or sawed into thin long squares, to serve instead of tiles for the covering of houses ; also for making tables, &c.

SOCLE, or **ZOCLE**, in architecture, a square piece broader than it is high, and serving to place under the bases of pedestals to support vases and other ornaments. We have mentioned the continued pedestal for columns and other purposes ; there is also a continued Socle, which is a kind

kind of stand without either base or cornice, carried round a whole building, and called a plinth. The word is derived from the *Latin, foccus, a shoe.*

SOFFIT, in architecture, any timber cieling, formed of cross beams of flying corniches, the square compartments or pannels of which are enriched with sculpture, painting or gilding; such are those in the palaces of Italy, and in the apartments of Luxembourg at Paris. This word is particularly used for the under side or face of an architrave, and for that of the corona or larmier, which the ancients called lacunar. The French *plafond*; and we usually the drip. It is enriched with compartments of roses, and has eighteen drops in the Doric order disposed in three ranks, six in each, placed to the right hand of the guttæ, and at the bottom of the triglyphs.

SOFTENING, in painting, the mixing and diluting of colours with the brush or pencil. To soften designs in black and white made with the pen &c. signifies to weaken the tint. To soften a portrait, is to change some of the strokes, and give a greater degree of sweetness and softness to the air thereof, which before had something rough and harsh in it.

SOLIDITY, in architecture, is applied both to the consistence of the ground whereon the foundation of a building is laid; and to a mass of masonry of extraordinary thickness, without any cavity therein.

SOLIVE, in building, a rafter, joist, or piece of wood slit or sawed, wherewith builders lay their cielings. The thickness of them differ according to their length, and their distances are commonly equal to their depth.

SOUBAISSEMENT, a French term appropriated by some architects, and signifying a continued socle, or a continued stand or pedestal, without base or cornice, carried round a whole building.

SPANISH ORDER, an order, as it is called, in architecture, in which the proportions differ little from those of the Corinthian, but there is a lion's head instead of a rose in the center of the abacus.

SPIRAL, in architecture and sculpture, implies a curve that ascends, winding about a cone or spire, so as all the points thereof continually approach the axis. It is distinguished from the helix by its winding around a cone; whereas the helix winds in the same manner around a cylinder.

SPIRE, in architecture, was used by the ancients for the base of a column, and sometimes for the atragal or tore. But among the moderns it denotes a steeple that continually diminishes as it ascends, whether conically or pyramidically.

STAIR-CASE, in architecture, the ascent inclosed between walls, or a ballustrade, consisting of stairs, or steps, with landing-places, and rails, serving to make a communication between the several stories of a house. The construction of a complete stair-case is one of the most curious

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works in architecture. The common rules to be observed therein are as follows : 1. That it have a full free light to prevent accidents of slipping, falling, &c. 2. That the space over-head be large and airy, which the Italians call *un bel sfocato*, i. e. good ventilation, in regard a man spends much breath in mounting. 3. That the half paces of landing-places, be conveniently distributed for re-passing in the way. 4. That to prevent rencounters, &c. the stair-case be not too narrow ; however, this last is to be regulated by the quality of the building. 5. That care be taken in placing the stair-case, so as the stairs may be distributed without prejudice to the rest of the building.

STATUARY, a branch of Sculpture employed in the making of statues. Statuary is one of those arts wherein the ancients surpassed the moderns ; and indeed it was much more popular, and more cultivated among the former than the latter. It is disputed between Statuary and painting, which of the two is the most difficult and the most artful. Statuary is also used for the artificer who makes statues. Phidias was the greatest Statuary among the ancients, and Michael Angelo among the moderns.

STATUE, is defined to be a piece of sculpture in full relievo, representing a human figure. Daviler more scientifically defines Statue a representation in high relievo and insulate, of some person distinguished by his birth, merit, or great actions, placed as an ornament in a fine building, or exposed in a public place, to preserve the memory of his worth. In strictness, the term Statue is only applied to figures on foot, the word being formed from *Stature*, the size of the body. Statues are formed with the chissel of several matters, as stone, marble, plaster, &c. They are also cast of various kinds of metal, particularly gold, silver, brass, and lead.

Statues are usually distinguished into four general kinds ; the first are those less than the life, of which kind we have several Statues of great men, of kings and of Gods themselves ; the second are those equal to the life, in which manner it was that the ancients, at the public expence, used to make Statues of persons eminent for virtue, learning, or the services they had done ; the third, those that exceed the life, among which, those which surpassed the life once and a half, were for kings and emperors, and those double the life, for heroes ; the fourth kind were those that exceeded the life twice, thrice, and even more, and were called colusses. Every Statue resembling the person it is intended to represent, is called *statua iconica*. Statues acquire various other denominations. 1. Thus allegorical Statue, is that which, under a human figure, or other symbol, represents something of another kind, as part of the earth, a season, age, element, temperament, hour, &c. 2. Curule Statues, are those which are represented in chariots drawn by bigæ, or quadrigæ, that is, by two, or four horses ; of which kind there were several in the circuses, hippodromes,

dromes, &c. or in cars, as we see some with triumphal arches, on antique medals. 3. Equestrian Statue, that which represents some illustrious person on horse-back, as that famous one of Marcus Aurelius, at Rome; that of king Charles the First, at Charing-cross; king George the Second in Leicester Fields; the late duke of Cumberland in Cavendish Square, &c. 4. Greek Statue denotes a figure that is naked and antique; it being in this manner the Greeks represented their deities, athletes of the olympic games, and heroes; the Statues of heroes were particularly called achillean statues, by reason of the great number of figures of that prince in most of the cities of Greece. 5. Hydraulic Statue, is any figure placed as an ornament of a fountain or grotto, or that does the office of a jet d'eau, a cock, spout, or the like, by any of its parts, or by any attribute it holds; the like is to be understood of any animal serving for the same use. 6. Pedestrian Statue, a Statue, standing on foot; as that of king Charles the Second, in the Royal Exchange; and of king James the Second in Privy Gardens. 7. Roman Statue, is an appellation given to such as are cloathed, and which receive various names from their various dresses. In repairing a Statue cast in a mould, they touch it up with a chisfel, graver, or other instrument, to finish the places which have not come well off; they also clear the barb, and what is redundant in the joints and projectures.

STEEPLE, an appendage erected generally on the western end of a church, to hold the bells. Steeples are denominated from their form, either spires or towers; the first are such as ascend continually, diminishing either conically or pyramidically. The latter are more parallelopipeds, and are covered at the top platform-like. In each kind there is usually a sort of windows or apertures to let out the sound, and so contrived at the same time, as to drive it down.

STILL-HOUSE. The Dutch have much the advantage of us in the structure of their Still-houses. The general rules in building in those houses, according to Shaw, should be such as follow. The first caution, is, to lay the floor aslope, not flat, where any wet work is to be performed. It should also be well flagged, with broad stones, so that no wet be detained in the crevices, but all may run off, and be let out at the drains made at the bottom and sides. The Stills should be placed a-breast on that side of the Still-house to which the floor has its current. Fronting the Stills, and adjoining to the back of the wall, should be a stage for holding the fermenting backs, and these being placed at a proper height, may empty themselves by means of a cock and a canal into the Stills, which are thus charged with very little trouble. Near this set of fermenting backs should be placed a pump or two, that they may readily supply them with water, by means of a trunk, or canal, leading to each back; under the pavement, adjoining to the Stills, should be a kind of cellar,

cellar, wherein to lodge the receivers, each of which should be furnished with its pump, to raise the low wines into the Still for rectification, and through this cellar the refuse wash, or Still bottoms, should be discharged by means of a hose, or other contrivance.

STRIGÆ, in ancient architecture, the lists, fillets or rays which separate the striges or flutings of columns.

STRIGES, in architecture, a term by which some express the flutings or channellings on the shafts of columns, supposed intended originally to represent the folds in a garment.

STRIURES, in architecture, a term by which some also express the flutings of columns. Vitruvius calls them by this name, and tells us they were originally intended to represent the foldings in a garment.

SUMMER, in architecture, a large stone, the first that is laid over columns and pilasters, in beginning to make a cross vault, or it is the stone which, being laid over a piedroit or column, is hollowed to receive the first haunce of a platband. In carpentry, it is a large piece of timber, which being supported on two stone piers or posts, serves as a lintel to a door, window, &c.

SUPERCILIUM, in the ancient architecture, the uppermost member of the cornice, called by the moderns corona, crown, or larmier. It is also used for a square member, under the upper tore in some pedestals; some authors confound it with the tore itself.

SWALLOW'S TAIL, in carpentry and joinery, a peculiar way of fastening together two pieces of timber so strongly as they cannot fall asunder.

SWELLING, in architecture, a term used to express an encrease of diameter, in a part of the column between the base and the capital. This many declare to be unnatural, but it has the authority of great masters.

SYMMETRY, in architecture, is the proportion which the several parts of a building have to one another, and to the whole. In what is called uniform symmetry there is this proportion observed through a whole fabric, and all its parts have the same relation one to another; in respective Symmetry, only the opposite sides are expected in this particular and exact manner to correspond to one another. The word is however generally used to express that relation and due proportion which runs through a whole building.

SYSTYLE, this term is used to express one of the intercolumniations or spaces between columns. In the Systyle disposition, the intercolumniation is four modules, or two diameters of the column.

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TABLE, in architecture, a smooth, simple member or ornament of various forms, but most usually in that of a long square. A projecting Table is that which stands out from the naked of the wall, pedestal, or other matter it adorns. Raked-Table, is that which is hollow in the die of a pedestal, or elsewhere, and is usually encompassed with a moulding. Razed-Table, is an embossment in a frontispiece for the putting an inscription, or other ornament, in sculpture. This is what M. Perrault understands by abacus in Vitruvius. Crowned Table, that which is covered with a cornice, and which a basso relievo is cut, or piece of black marble incrustrated for an inscription. Rusticated-Table, that which is picked, and whose surface seems rough, as in grottos, &c.

TÆNIA, in architecture, a member of the Doric capital, resembling a square fillet, or reglet; it serves instead of a cymatium.

TALON, in architecture, a kind of moulding, which consists of a cymatium, crowned with a square fillet, frequently found to terminate joiners works, as those of doors, windows, &c.

TALUS, or **TALUT**, in architecture, the inclination or slope of a work; as of the outside of a wall, when its thickness is diminished by degrees, as it rises in height to make it the firmer.

TAMBOUR, in architecture, a term applied to the Corinthian and Composite capitals, as bearing some resemblance to a drum, which the French call Tambour. Tambour is also used for a little box of timber-work covered with a ceiling, within side the porch of certain churches, both to prevent the view of persons passing by, and to keep off the wind, &c. by means of folding doors. It also denotes a round coarse stone, several of which form the shaft of a column not so high as a diameter.

TEMPLE, a general name for places of public worship, whether Pagan, Christian, or otherwise. But the word, in a restrained sense, is used to denote the places or edifices, in which the Pagans offered sacrifice to their false gods. Thus we hear of the temples Jupiter, Apollo, Bacchus, &c.

Temples were built and adorned with all possible splendour and magnificence, partly out of the great respect they bore to the gods, and partly to create an awe and reverence in the worshippers. They were constructed in the manner which was thought most agreeable to the gods, to whom they were dedicated. Thus Jupiter, they thought, took most delight in pillars of the Doric order; Bacchus in the Ionic, and Vesta in the Corinthian; though this was not universally or constantly observed. As to the places where Temples were built, they made choice

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of those with a view to the disposition of particular deities. Hence some were erected on the tops of mountains, others in vallies, and others in cities. Those built in the country were generally surrounded with groves sacred to the tutelar deity of the place; and wherever they stood, it was so contrived, that the windows being opened, might receive the rays of the rising-sun. The most antient situation was with the front towards the west, and the altars and statues at the east end, it being a custom among the heathens to worship with faces towards the east, so as that the doors being open, shou'd receive the rising-sun. If the temples were built by the side of a river, they were so situated that travellers might have a fair prospect of them, and pay their devotion as they passed by. Temples, according to the number and difference of their columns, were divided into tetrastyle, prostyle, amphiprostyle, periptere, diptere, &c.

Tetrastyle Temple, a Temple that had four columns in front, and as many behind,—as the Temple of Fortuna Virilis, at Rome.

Prostyle Temple, that which had only columns in its front or fore-side,—as that of Ceres, at Eleusis, in Greece.

Amphiprostyle or *double Prostyle Temple*. That which had columns both before and behind, and which was also tetrastyle.

Periptere Temple, that which had four rows of insulated columns around, and was hexastyle, that is, had six columns in front,—as the Temple of Honour, at Rome.

Diptere Temple, that which had two wings, and two rows of columns around, and was also octostyle, or had eight columns in front, as that of Diana at Ephesus.

Temples, among us, denote inns of court, thus called, because formerly the dwelling-house of the Knights-Templars. Also small elegant buildings in the gardens of the nobility and gentry.

TENON, in building, &c. the square end of a piece of wood, or metal, diminished by one third of its thickness, to be received into a hole in another piece, called a mortise, for the jointing or fastening the two together. It is made in various forms, square, dove-tailed for double mortises, and the like.

TERMINUS, in architecture, a kind of column adorned at the top with the head, and sometimes part of the body of a man, woman, or Pagan deity; and in the lower part diminishing into a kind of a sheath or scabbard, as if the remainder of the figure were received into it. The common use of the termini is by way of statues to adorn gardens, but they are sometimes also placed as consoles or brackets to support entablatures. These are varied greatly in the execution, some being rustic, others double, and the like.

THEATRE

THEATRE, a public edifice for the exhibiting of scenic spectacles, or shews, to the people, comprehending not only the eminence on which the actors appeared, and the action passed, but also the whole area of the place, common to the actors and spectators. The Romans borrowed the form of their theatres from those of the Greeks, which were generally built in the shape of a semicircle, encompassed with porticos, and furnished with seats of stones, disposed in semi-circles, rising gradually one above another. The principal parts of the ancient Theatres were the scena, proscenium, orchestra, and area. Among the moderns, Theatre more peculiarly denotes the stage, or place whereon the drama or play is exhibited; answering to the proscenium of the ancients. It is also used, in a more comprehensive sense, for the whole play-house. The word Theatre is used in architecture, chiefly among the Italians, for an assemblage of several buildings, which, by a happy disposition and elevation, represents an agreeable scene to the eye. In a more restrained sense of the word it was the place of a public spectacle and nothing else. What is called the temple of Bacchus at Athens, the remains of which are yet in being, was a Theatre, and one of the first we know of.

TIGE, in Architecture, a French term for the shaft or fust of a column, comprehended between the astragal and the capital.

TIMBER, includes all kinds of felled and seasoned woods used in the several parts of building, as carpentry, joinery, turnery, &c. The sorts of Timber are numerous, we shall only mention some of the most useful from Evelyn's Sylva, &c. as,

1. Oak, the uses of which need no enumerating; to endure all seasons and weathers, there is no wood like it; hence its use in building ships, in posts, rails, &c. For water-works it is second to none, and where it lies exposed both to air and water, there is none equal to it.

2. Elm. This felled between November and February is all spine or heart, and no sap, and it is of singular use in places where it is always wet or dry, its being tough makes it useful to wheel-wrights, mill-wrights, &c. and its not being liable to break and fly in chips, makes it fit for dressers and planks to chop on.

3. Beech: its chief use is in turnery, joinery, and upholstery, and the like, as being of a white, fine grain, and not apt to bend or split. Of late it is used for building timber, and if it lie constantly wet, is judged to out-last oak.

4. Ash: its use is almost universal; it is good for building where it may lie dry. It serves the carpenter, cooper, turner, plough-wright, wheel-wright, gardener, and at sea for oars, hand-spikes, and many other uses.

5. Fir:

5. Fir : commonly known by the name of deal, is of late much used in buildings, especially within doors, for stairs, floors, waincot, and most works of ornaments.

6. Walnut-tree, is of universal use, unless for the outsides of buildings ; very fit for the joiner's use, being of a more curious brown-colour than beech, and less subject to worms.

7. Chesnut-tree, next to oak, is the timber most sought for by joiners and carpenters ; it is very lasting.

8. Service-tree, used in joinery, as being of a delicate grain, and fit for curiosities : it also yields beams of considerable bigness for building.

9. Poplar, abel : this and aspen differing very little in their nature, are of late much used instead of fir ; they look as well, and are more tough and hard.

10. Alder, much used for sewers, or pipes, to convey water ; when always wet, it grows hard like a stone, but soon rots, if it is alternately wet or dry.

The uses of timber are so many, and so great, that the procuring a sufficient supply of it extremely well deserves the care of every state, as it must be a great disadvantage to it to be obliged to have recourse to its neighbours, and purchase, at a very considerable and continually renewed expence, what might, by an easy œconomy, be sufficiently supplied at home.

Preserving of Timber. When boards, &c. are dried, seasoned, and fixed in their places, care is to be taken to defend and preserve them ; to which the smearing them with linseed-oil, tar, or the like oleaginous matter, contributes much.

For measuring hewn or square timber, the custom is, to find the middle of the length of the tree, and there to measure its breadth, by clapping two rules to the sides of the tree, and measuring the distance betwixt them ; in like manner they measure the breadth the other way. If the two be found unequal they are added together, and half their sum is taken for the true side of the square.

Tinging of Marble. The art of doing this has, in several persons hands, been a very lucrative secret, though there is scarce any thing in it that has not at one time or other been published. Kincher has the honour of being one of the first who published any thing practicable about it. This author meeting with stones in some cabinets supposed to be natural, but having figures too nice and particular, to be supposed of Nature's making, and these not only on the surface, but sunk through the whole body of the stones, was at the pains of finding out the artist who did the business ; and on his refusing to part with the secret on any terms, this author, with Albert Gunter, a Saxon, endeavoured to find it out ; in which they succeeded at length very well. The method is this ;
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take aqua fortis and aqua regia of each two ounces, sal armoniac one ounce, spirit of wine two drams, about twenty-six grains of gold, and two drams of pure silver; let the silver be calcined and put into a vial, and pour upon it the aqua fortis; let this stand for some time, then evaporate it, and the remainder will first appear of a blue, and afterwards of a black colour. Then put the gold into another vial, pour the aqua regia upon it, and when it is dissolved, evaporate it as the former. Then put the spirit of wine upon the sal armoniac, and let it be evaporated in the same manner. All the remainders, and many others made in the same manner from other metals, dissolved in their proper acid menstrua, are to be kept separate, and used with a pencil on the marble. These will penetrate without the least assistance of heat, and the figures being traced with a pencil on the marble, the several parts are to be touched over with the proper colours, and this renewed daily till the colours have penetrated to the desired depth into the stone. After this, the mass may be cut into thin plates, and every one of them will have the figure exactly represented on both surfaces, the colours never spreading. The nicest method of applying these, or the other tinging substances, to marble, that is to be wrought into any ornamental works, and where the back is not exposed to view, is to apply the colours behind, and renew them so often till the figure is sufficiently seen through the surface on the front, though it does not quite extend to it. This is the method that, of all others, brings the stone to a nearer resemblance of natural veins of this kind.

Torus, in architecture, a large round prominent moulding in the base of columns, resembling a cable, but without the wreathings or twistings. The word is derived from the Greek. In the bases of some of the orders there is a single Torus, in others there are two with a scotia between them, and in this disposition they have a very beautiful effect.

Tower, a high building, consisting of several stories, usually of a round form, though sometimes square or polygonal. Towers are built for fortresses, prisons, &c. as the Tower of London, the Tower of the Bastille at Paris. The word Tower among the ancients, signified, a palace or large house, 2 Kings v. 24. The Tower of London is not only a citadel, to defend and command the city, river, &c. but also a royal palace, where our kings, with their courts, have sometimes lodged; a royal arsenal, wherein are arms and ammunition for sixty thousand soldiers; a treasury for the jewels and ornaments of the crown; a mint for coining of money; the great archive, wherein are preserved all the ancient records of the courts of Westminster, &c. and the chief prison for state criminals.

TRABEATION, a name by which some call the entablature of a column, consisting of the architrave, freeze and cornice.

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TRANSON, among builders, the piece that is framed across a double light window.

TRIGLYPHS, in architecture, a sort of ornaments, repeated at equal intervals in the Doric freeze. Each Triglyph consists of two entire gutters or channels, cut to a right angle, called glyphs, and separated by three interstices, called, by Vitruvius, femora, from each other, as well as from two other half channels, which are at the sides. The ordinary proportion of Triglyphs is to be a module broad, and one and a half high. But this proportion M. Le Clerc observes, sometimes occasions ill-proportioned intercolumniations in porticos; for which reason he chooses to accommodate the proportion of his Triglyphs to that of the intercolumns.

TRIMMERS, in architecture, pieces of timber framed at right angles to the joints, against the ways for chimneys, and well-holes for stairs.

TRINGLE, in architecture, a name common to several little square members or ornaments, as reglets, listels, and plat-band. Tringle is more particularly used for a little member fixed exactly over every triglyph, under the plat-band of the architrave from whence the guttæ or pendant drops hang down.

TROCHILUS, in architecture, a name by which some call the hollow moulding that is between the two torus's of the base of columns, and which is more commonly called scotia: this moulding, when it stands thus on columns, having much the appearance of a pulley.

TRUNK, when we speak of a column, the Trunk is the shaft or fust; when the word is applied to a pedestal, it signifies the dado, or die, or body of the pedestal, answering to the shaft of the column.

TURNING, a branch of sculpture, being the art of fashioning hard bodies, as brass, ivory, wood, &c. into a round or oval form, in a lathe. Turning is performed by putting the substance to be turned upon two points, as an axis, and moving it round on that axis, while an edge-tool, set steady to the outside of the substance in a circumvolution thereof, cuts off all the parts which lie farther off the axis, and makes the outside of that substance concentric to the axis.

The invention of Turning seems to have been very ancient. Some, indeed, to do honour to the age, will have it brought to perfection by the moderns; but if what Pliny and some other ancient authors relate, be true, that the ancients turned those precious vases enriched with figures and ornaments in relievo, which we still see in the cabinets of the curious, it must be owned, that all that has been added in these ages, makes but a poor amends for what we lost of the manner of turning of the ancients.

The lathe or principal instrument used in Turning, is composed of two wooden cheeks, or sides parallel to the horizon, having a groove,
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or opening between them; perpendicular to these are two pieces, called heads or puppets, made to slide between the cheeks, and to be fixed down at any point at pleasure; these have two points or center pins, between which the piece to be turned is fastened by the help of a screw. There is also a square piece of wood called a rest, which bears up the tool, and keeps it steady. The piece is turned round backwards and forwards by means of a string put round it, and fastened above to the end of a pliable hole, and below to a treddle or board moved by the foot. This is the common lathe; but there is another used in hollow Turning, &c. very different from it.

This lathe is composed like the other of two cheeks, and has also two heads fitted to slide between them; but has no pole, being turned by means of a wheel and pulley. The pulley is fastened on a kind of spindle called a mandrel, one end of which is pointed, and received into the center of the back screw, which goes through one of the heads; and near the other end, called the verge, it moves in a piece called the collar; the end of the mandrel passes through the collar, and on it the piece to be turned is fastened.

TUSCAN ORDER, in architecture, the first, simplest, and most massive of the five orders. It is of Roman origin, and much resembles the original Doric of the Greeks. The original Greek orders were only three, the Doric, Ionic, and Corinthian; to these the Romans have added the Tuscan, which is plainer than the Doric, and the Composite, which adds the volutes of the Ionic to the leaves of the more decorated capitals. The orders from three by this became five, and of these the Tuscan is the plainest, strongest, and most massy.

The Tuscan column consists only of a single torus, resting upon a plinth and crowned with a cincture; the shaft has six diameters in height, and its diminution is a fourth or a fifth part, for in these architects vary. The capital is very plain; it consists of an abacus, a quarter-round, astragal and fillet; under the neck there is another astragal and fillet, but these belong to the shaft of the column. The entablature is plain and large, it consists of an architrave of one face, a plain freeze, and a cornice, with a few plain mouldings.

The Tuscan order is therefore no other than the Doric made stronger by shortening its columns, and simpler by the largeness and small number of its mouldings. No order is so easily executed as this, because of its plainness; but there is, notwithstanding, a beauty in that plain simplicity of structure, which makes it deserve a place not only where strength, but where elegance is considered.

Some writers affirm, that the Tuscan order takes its name from an ancient people of Lydia, who coming out of Asia, to people Tuscany, first executed it in some temples, which they built in their new plantations.

TYLE,

TYLE, or TILE, in building, a sort of thin, fictitious, luminated brick, used on the roofs of houses; or more properly a kind of fat clayey earth, kneaded and moulded of a just thickness, dried and burnt in a kiln like a brick, and used in the covering and paving of houses. There is so much conformity in the substances of bricks and tiles, that the earth that makes one will in many cases serve for the other. The clay of which Tiles are made may always be wrought into bricks, but only the best of the brick earth can be wrought into Tiles; because, being thinner, they require more toughness in the substance. All Tiles are made in the manner of bricks, by tempering and beating up the clay to a due consistence, and then fashioning them in a mould; but more care and pains are required in this work than in making of bricks, for the Tile-making approaches more to the pottery work, and the earth of which they are made is such as might be employed in potteries. More care is also required in the management of the fire for burning them, than is needful in bricks; for if it is too slack they do not get a proper hardness, and if too violent they suffer in their shape, and are glazed. The fire must be watched and managed with discretion, and he must be a trully as well as a knowing person to whom this care is committed, for a little neglect may be of vast mischief and loss to the proprietor.

The Tiles for all sorts of uses may now be comprized under six heads. 1. The plain Tile for covering of houses, which is flat and thin. 2. The plain Tile for paving, which is flat also but thicker, and its size 9, 10, or 12 inches. 3. The pantile, which is also used for covering buildings, and is hollow and crooked, or bent, somewhat in the manner of an S. 4. The Dutch glazed pantile. 5. The English glazed pantile. And 6, the gutter Tile, which is made with a kind of wings.

Common Tiles are best when they are firmest, soundest, and strongest.

There are not so many differences in these as in bricks, either in respect of body or colour, but according to the nature of the clay, and the degree of fire in burning, some are duskier and some ruddier in colour. The dusky-coloured are usually the strongest; the workmen sometimes, when they have both colours, amuse themselves with laying them separately in rows, in which case they give the roof a striped aspect. But this is a pitiful and idle fancy.

Paving Tiles are made of a more sandy earth than the common or plain Tiles; the materials for these last must be absolute clay, but for the others a kind of loam is used, though it must be of a tough substance, or they will not have due strength and firmness. This loam burns to a fresher red colour than the best of the common Tile-clay. These are made thicker and larger than the common roof Tiles; and, when
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care has been taken in the choice of the earth, and the management of the fire, they are very regular and beautiful.

PANT'LES, when of the best kind, are made of an earth not much unlike that of the paving tiles, and often of the same; but the best sort of all is a paler coloured loam that is less sandy; they have about the same degree of fire given them in the baking, and they come out nearly of the same colour.

GLAZED PANTILES, whether Dutch or English, get that addition in the fire, many kinds of earthy matter running into a glassy substance in great heat, as is seen in the glazing of common earthen-ware, and it is a great advantage to them, preserving them much longer than the common Pantiles, so that they are very well worth the additional charge that attends the using of them.

GUTTER TILES are made of the same earth as the common Pantiles and only differ from them in shape; but it is advisable, that particular care be taken in tempering and working the earth for these, for none are more liable to accidents.

DUTCH TILES, for chimnies, are of a kind very different from all these, some are white, and some quite black. The clay of which these Dutch Tiles are made, is very fine, soft, and tender; it is much the same with that whereof the apothecaries pots are made, and it is glazed in the same manner. These were once in great reputation in ordinary houses, but at present they are grown into neglect.

Of the manner of using Tiles. The great use of Tiles is for the covering of houses; and for this purpose where either service or beauty are regarded the plain common Tile is greatly preferable to any other; but this, in its best condition is not at all comparable to slate. Plain Tiles we have observed, are in colour either reddish or dusky. In the first condition they have a fiery look, and in the other they appear poor and dirty; either way they have a rough, coarse and heavy aspect; and the mortar in the best manner of laying them is seen very plainly in irregular white joints and seams.

The neatness and pale look of the common slate gives that covering a vast preference. Having nothing coarse or fiery in the appearance, it agrees perfectly well with the stone or wood-work, and with the grey bricks of the chimnies. Then in the place of the harsh and heavy aspect of the Tiles, slate has a light and elegant appearance; the pieces are thin and lie regular, and the joints of mortar are so slender they are scarce at all seen. This preference is so very great, that it entirely banishes the use of Tiles from elegant edifices, or other buildings of expense; and when we consider how vastly more durable slate is, as well as handsome, we shall be inclined to prefer it in all.

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If the plain Tiling be thus inferior to slate, the pantiling is much worse than that, both in duration and aspect. There are occasions on which Tiling is proper, and there are particular buildings whereon pantiling is better than the plain method; but what we have said is delivered as general, and admits these exceptions; in ordinary buildings adjoining to houses, and particularly in such as have flat roofs, the pantiling does very well, and comes cheaper than the other kind, the tiles being a great deal larger, and laid with less trouble. The plain or common Tiles have holes for pins, and are hung on by means of those pins. The pantile has a lump in the place of a pin, and hangs by that; a few of them cover a great deal of roof, and where they are not in the way of accidents, they will last a great while, but they are easily loosened, injured, or broken.

The Dutch glazed pantiles are better than the English glazed, but either are much superior to the common pantile, and for most uses to the plain Tile; they are dearer, but their bigness makes great amends for that, and they are very lasting. In the common pantiling, the difference in size is so great an article, that where seven hundred and sixty plain Tiles, at a six inch gauge, are required, the same space which is a square will be covered by one hundred and seventy pantiles. The use of gutter tiles is explained by their name, their place being in the vallies or gutters of cross buildings, and when they are used they are laid plain, without any railing, the broad end upwards.

As to the thick Tiles, when they are found and the colour good, they are a very pretty paving for country ground floors in meaner houses, and for the offices of such as are better. They easily gather dirt, but they easily wash again, and when cleaned they have a pretty and bright appearance. In the same manner as Portland paving is made with dots of black marble, a paving with these Tiles dotted with black, may be done very pretty. This will have an agreeable effect in the hall of a small country house, where a plain and rural look is affected.

The Dutch Tiles are in a manner neglected, though they used to be in general repute about chimnies. They are indeed inferior to ordinary stone for that purpose, because of their continual falling. The joints are required to be small, for the sake of beauty, and this makes the setting weak, and the continual effect of the fire destroys the force of the lime, so that they are often dropping; then their thinness is such, that a small blow cracks them, and when cracked they soon fall out. This is the greatest defect, for it must be confessed, that when entire, they look v ry pretty. If they were made thicker, and some contrivance was used to keep them firmer, they might be worth bringing into fashion again, where the expence of marble is not allowed, for there is a particular Brightness in their glazing, and nothing looks so clean; nor is this
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the only advantage, for they reflect the heat much better than stone. In this case all the trouble they take about the figures is ridiculous, and would be better spared; they are ill done, and the plain white are much clearer in the look and prettier; if any thing were done by way of colour, it should be throwing on a little blueish loosely to imitate the veining of marble. The plain black also look very well.

TYMPAN, or **TYMPANUM**, in architecture, the area of a pediment, being that part which is in a level with the naked of the frieze. Or it is the space included between the three corniches of a triangular pediment, or the two corniches of a circular one. Sometimes the Tympan is cut out, and that part filled with an iron lattice to give light, and sometimes it is enriched with sculpture in bas relief. Tympan, among joiners, is also applied to the pannels of doors.

Tympan of an Arch, a triangular space or table in the corners or sides of an arch, usually hollowed, and enriched sometimes with branches of laurel, olive-tree, or oak, or with trophies, &c. sometimes with flying figures, as Fame, &c. or sitting figures, as the cardinal virtues.

V.

VAGINA, properly signifies a sheath, or scabbard; and the term *Vagina* is used, in architecture, for the part of a terminus, because resembling a sheath, out of which the statue seems to issue.

VARNISH, or **VERNISH**, a thick, viscid, shining liquor, used by painters, gilders, and various other artists, to give a gloss and lustre to their works, and to defend them from the weather, dust, &c.

Laying on of Varnishes. 1. If you varnish wood, let your wood be very smooth, close-grained, free from grease, and rubbed with rushes. 2. Lay on your colours as smooth as possible; and, if the Varnish has any blitters in it, take them off by a polish with rushes. 3. While you are varnishing, keep your work warm, but not too hot. 4. In laying on your Varnish begin in the middle, and stroke the brush to the outside, and then to another extreme part, and so on till all be covered; for if you begin at the edges, the brush will leave blots there, and make the work unequal. 5. In fine works, use the finest tripoli in polishing; do not polish it at one time only, but, after the first time, let it dry for two or three days, and polish it again for the last time. 6. In the first polishing, you must use a good deal of tripoli, but in the next a very little will serve; when you have done, wash off your tripoli with a sponge and water; dry the Varnish with a dry linnen rag, and clear the work, if a white ground, with oil and whiting, or, if black, with oil and lamp-black.

VASE,

VASE, a term frequently used for ancient vessels dug from underground, or otherwise found, and preserved in the cabinets of the curious. In architecture, the appellation Vase is also given to those ornaments placed on corniches, fackles, or pedestals, representing the vessels of the ancients, particularly those used in sacrifice; as incence-pots, flower-pots, &c. They serve to crown or finish facades, or frontispieces, and hence called acroteria. The term Vase, however, is more particularly used in architecture, to signify the body of the Corinthian and Composite capital, otherwise called the tambour or drum, and sometimes the campana or bell. Some comprehend under the word Vase the urns on monuments and other buildings, but this being of a different form, should be kept to their distinct name, as we shall explain under the word urn.

VAULT, in architecture, an arched roof, so contrived that the stones which form it sustain each other. Vaults are, on many occasions, to be preferred to soffits, or flat cielings, as they give a greater height and elevation, and are besides more firm and durable. Salmasius observes, that the ancients had only three kinds of vaults. The first was the formix, made cradle-wise; the second testudo, i. e. tortoise-wise, which the French call cul de four, or even-wise; and the third concha, or trumpet-wise. But the moderns have subdivided these three sorts into many more, to which they have given different names according to their figures and uses; some of them are circular, and others elliptical. Again, the sweeps of some are larger, others less portions of a sphere. All such as are above hemispheres, are called high, or surmounted vaults; and all that are less than hemispheres, are called low, or surbated, vaults, or testudines. In some vaults the height is greater than the diameter; in others it is less; others again, are quite flat, and only made with haunses; others like ovens, or in the form of a cul de four, &c. and others growing wider as they lengthen, like a trumpet. Arched cielings are a kind of vaults, and they are very beautiful as well as strong.

Master Vaults, are those that cover the principal parts of buildings, in contradistinction to the upper or subordinate Vaults, which only cover some little part, as a passage or gate, &c.

Double Vault, is one that is built over another, to make the outer decoration range with the inner; or, to make the beauty and decoration of the inside consistent with that of the outside, leaves a space between the concavity of the one, and the convexity of the other. Instances of which we have in the dome of St. Peter's at Rome, St. Paul's at London, and in that of the Invalids at Paris.

Vaults with Compartments, are such whose sweep, or inner face, is enriched with pannels of sculpture, separated by platbands. These compartments, which are of different figures, according to the vaults, and
usually

usually gilt on a white ground, are made with stone or brick walls, as in the church of St. Peter's at Rome, or with plaister on timber vaults.

Key of a VAULT, is a stone or brick in the middle of the vault, in form of a truncated cone, serving to bind or fasten all the rest.

Keins or fillings up of a VAULT, are the sides which sustain it.

Redentive of a VAULT, is the part suspended between the arches or ogives.

VENEERING or FINFERING, a kind of marquetry, or inlaying, whereby several thin slices or leaves of fine woods, of different kinds, are applied and fastened on a ground of some common wood.

VENTILUCTS, in building, are spiracles or subterraneous places, where fresh cool wind being kept, they are made to communicate by means of tubes funnels, or vaults, with the chambers or other apartments of a house, to cool them in sultry weather.

VENTILATORS, a machine by which the noxious air of any close place, as an hospital, goal, ship, chamber, &c. may be changed for fresh air. The noxious qualities of bad air have been long known, tho' not sufficiently attended to in practice; but it is to be hoped, that the indefatigable pains taken by Dr. Hales, to set the mischiefs arising from foul air in a just light; and the remedy he has proposed by the use of his ventilators, will at length prevail over that unaccountable sloth, or obstinacy, which, where particular interests are not concerned, seems to possess the generality of mankind, and which rarely allows them to give due attention to any useful discovery.

VESTIBLE, in architecture, a kind of entrance into a large building, being an open place before the hall, or at the bottom of the stair-case. Vestibles intended for magnificence are usually between the court and the garden. The Romans had Vestibles at the entrance of their houses, for sheltering those persons who were obliged to stand at the door; and we have now Vestibles of a like kind in many old churches, houses, &c. usually called porches. The term Vestibie is sometimes also used for a little anti-chamber, before the entrance of an ordinary apartment.

Vivo, in architecture, the shaft or sust of a column. The term is also used in a more particular sense for the naked of a column, or other part.

VOLUTE, in architecture, the name of a scroll, which is the distinguishing character of the Ionic capital. It is supposed to represent the bark of a tree, which is laid up on the rim of a vessel, and as it has dried has curled and twisted itself into a kind of spiral scroll. There are a sort of Volute also in the Corinthian capital, but they are smaller and more numerous than in the Ionic; and in the Composite capital these larger and proper Volutes of the Ionic are added.

In the most antique Ionic Volutes, the list or edge throughout all the circumvolutions, is in the same line or plane; and in some they project; on some they are oval, and in others the canal of one circumvolution is detached from the list of another by a vacuity; in others the round is parallel to the abacus, and springs out from behind the flower thereof; and in some it seems to spring out of the vase from behind the ovum, and rises to the abacus.

The Volute has by some been supposed to represent the horn of a ram, and by others the curl of a woman's hair; but the most natural resemblance is that of the bark, and that is most in the character of the ancient designs in architecture. Consoles, modillions, and some other ornaments, have sometimes a sort of Volute.

UPRIGHT, in architecture, a representation or draught of the front of a building, called also an elevation or orthography.

URELLA, in architecture, the little spiral twist or volute that is under the flower in the Corinthian capital, it is formed by a twisted stalk of the acanthus, and is more commonly the helix, sometimes the caulicole.

URN, in architecture, a kind of vase, serving to crown and decorate balustrades, and other ornamental parts of buildings. Urn is too commonly used as of the same meaning with vase, but it properly denotes a distinct kind and form. The Urn should be low and wide, and is fittest for grottos and fountains. Urns are also used on tombs, for which purpose they are generally enriched with sculpture, and are distinguished by the name of funeral Urns. The ancients preserved the ashes of the burnt bodies in urns, and thence has arisen this custom of using Urns on monuments and mausoleums. For which reason they were called cineraria, and urnæ cinerariæ, and were placed sometimes under the tomb-stone whereon the epitaph was cut, and sometimes in vaults in their own houses. Urns were also used at their sacrifices to put liquid things in.

W.

WAINSCOT, in building, the timber work that serves to line the walls of a room, being usually made in pannels, and painted, to serve instead of hangings.

WALL, in architecture, the principal part of a building, as serving both to inclose it, and support the roof, floors, &c. Nothing is of so much consequence as the raising them in a workman-like manner. The foundation walls are to diminish in thickness as they are wrought up, and that diminution should be continued to the top of the building, the workman still taking care to keep the center of the Wall all the way strait from the bottom of the foundation.

Walls

Walls in this country are principally built of these two materials, brick or stone, and in building about London brick is the most common. We see, in some parts of the kingdom, Walls built of flints cut into a tolerably even form in a very surprising manner. There are at this time some fine Walls standing of this material in the city of Norwich, and it was introduced in the late old gate at Whitehall, and some of the adjoining buildings of the same period. This was an art unknown to the ancients, and it is lost again at this time; but it was strong and beautiful.

In the Walls of common houses, which are of brick, the general diminution from the bottom to the top, is one half the thickness at the bottom; the beginning is two bricks, then a brick and a half, and at the upper part one brick, thickness. In larger edifices, the Walls are made proportionably thicker, but the dimension is preserved in much the same manner. Some Walls are plain and continued, others made with intermissions. When a building is to be strong, the Walls must have a proportionable thickness. We have said that they need not be all the way of an equal diameter; the decrease of this is what we call the diminution of a Wall, and we have observed already, that this diminution should be made equal on each side, that the load may be exactly in the middle. The Wall should be carried up all the way exactly perpendicular to the grand-work; for the right angle it makes in this is the foundation of strength and firmness. If the Wall be composed of two kinds of materials, as stone and brick, the massiest and heaviest are to be used in the lowest part, as being fitter to bear than to be born, and the lightest at the top.

The diminishing in thickness as the Wall rises, saves both weight and expence; but it is not absolutely necessary, for if the Wall were carried up in a perfect perpendicular from bottom to top, and all the way of the same thickness, it would not for that reason be less strong. In this case the keeping the perpendicular perfect would be the great difficulty and the great article of merit. We find the ancients were able to do this; for we see in the remains of their works, Walls thus carried up to an exorbitant height; but our architects are more ready to be astonished and admire, than to study and imitate them.

The great rule for the thickness of the Wall in all buildings is, that it be proportioned to the weight it is to support. This is to be carefully computed, and there will be no danger of the strength of the edifice; for the great occasion of that fault is the not observing this proportion. A Wall that stands alone is its own burthen and support; the higher parts press upon the lower, and the lower bear up the higher; this is all, and the structure of it is therefore plain and easy. In a larger building the riches, roofs and the floor, are the burthen; the Walls are the support:
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let the architect therefore compute the weight of the one according to his plan, and to that proportion the strength of the other. The thick Walls that bear directly upon their foundations press from top to bottom; the arches press side-ways, and to know how much, we must measure their convexity. The floors and the roof have a great pressure perpendicularly, and a little obliquely: all this must be carefully considered, and upon this depends the computation of the general load, and of the necessary proportioned thickness of the Walls. The strength of a building depends upon the force of its supports: and the great art on this head is, that of giving a plain wall the utmost strength of which it is capable.

We have advised the young architect to be careful in this computation, that he may know what strength his Walls ought to have, for it is as easy to make them too thick as too thin, and either extreme is equally unworthy of a good builder; too much thickness in Walls not only is the expence of a great deal of needless money, but it gives the edifice a very heavy aspect. The great art is to join strength and delicacy. We see the former consulted in many of our modern buildings at the expence of the latter.

The ancients had an art in joining these that we have lost. They were sparing of stone, but they never grudged iron-work, and by the means of that assistance, and of a perfect truth in their perpendiculars, they have left us models we despair of copying. Our houses tumble down after a few years for want of strength; and we have consecrated the heaviness of our work in most of the modern churches.

There is one farther particular which regards strength in the structure of a plain Wall, and that is the fortifying the angles. This is best done with good stone on each side, which gives not only a great deal of strength but a great deal of beauty. A Wall that is raised over arches and pillars, provided they be judiciously directed, and the work carried on in the same manner, stands as firm as one that is begun from a plain foundation.

Pilasters properly applied are a very great strengthening to Walls; their best distance is about every twenty foot, and they should rise five or six inches from the naked of the Wall. A much slighter Wall of brick, with this assistance, is stronger than a heavier and massier built plain.

In brick Walls of every kind, it is an exceeding addition to their strength to lay some chief courses of a larger and harder matter, for these serve like sinews to keep all the rest together, and are of very great use when a Wall happens to sink more on one side than another.

In the most perfect way of forming the diminution of Walls, the middle of the thinnest part being directly over the middle of the thickest,
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the whole is of a pyramidal form; but when one side of the wall must of necessity be perpendicular and plain, it must be the inner, for the sake of the floors and cross walls. The diminished part of the outside may be covered in this case with a fascia or cornice, which will be at once a strength and ornament.

As the openings in a wall are all weakenings, and the corners require to be the strongest parts, there never should be a window very near a corner. Properly, there should always be at least the space of a breadth of the opening firm to the corner. This is the general idea of a wall, and, according to these principles, it may be raised of any needful height, and for the support of any weight above; and the young architect being thus acquainted with the form, we shall next lead him to the consideration of its construction of whatsoever materials.

The ancients erected their walls sometimes of stone and sometimes of brick, as we do; and by the remains that are yet extant of the several kinds, we find they had various ways of constructing them. At present, architecture in this, as in its other branches, is reduced into a much narrower compass than it has been in earlier times; but as it is not impossible to improve upon the present practice, and as the works of the ancients are in all respects the best models we can follow in the attempts of improvement, we shall here give a short recital of their several manners of constructing them, before we mention those of our own time.

Their chequer work, or reticulated wall, was at one time famous, but was sooner out of use than the others. This had corners of brick, and courses of brick to bind the whole; there were about three courses at every two feet and half; the inward part of the rest was made of cement, and the facing was chequered.

Their common brick walls were made with the two sides of good bricks, and the middle was filled up with mortar and brick-bats rammed together.

Their cement walls were composed of cement with pebbles and earth, laid in a rough manner, sometimes with, and sometimes without mortar, but the corners were strengthened with brick or stone, and at every two feet height there ran courses of brick-work, to bind and strengthen them.

Their rustic walls were built with rough and irregular stones of various shapes and sizes, which they laid together as evenly as they could by means of a leaden rule; this being bent according to the place where stone was to be laid, shewed how it was to be formed and placed.

Their squared walls were made of larger and smaller stones regularly cut and squared, and laid with great beauty. A course of larger and a course of smaller usually were laid over one another. This was a wall of great beauty and great strength.

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Their coffer-work walls were made of rough and ragged stones, with a strong mortar. These had their names from the manner of working them. They made a kind of oblong coffers of boards distant by the intended thickness of the wall, and into these they threw ragged stones, cement, and earth at random; but they began with a course of brick-work, and made courses also between. The mortar we use at this time would not hold such materials together in a wall; but we have before observed, that the ancients were much more careful both in the materials and manner of working it; we see an instance of the effect of that care and pains, for there are walls of this structure in which no trowel was used, but the force of the mortar held the most uneven stones, and they are very strong after two thousand years.

There occur also remains of a considerable antiquity, in which we see a kind of coffer-work, of a solid substance, with this rough mixture within, the coffer-work being the essential part of the wall; in these two rows of good free stone were laid at a considerable distance, and there ran cross-bars of the same stone from space to space between them; the rest of the inner space was vacant in form of great square coffers, and they filled up with rough stones and mortar poured in together, which hardening, with the rest became a solid part of the wall.

Vitruvius saw the objection to the chequered wall, that it would be more liable to accidents than the others; and it was found so, and therefore disused.

The double brick walls with cement and brick-bats between, are extremely strong and fit for great buildings; we see remains of them in the rotunda and in the baths of Dioclesian. We have examples of the cement walls in the amphitheatre of Verona: the walls of the prænestæ afford an instance of the rustic, and they paved their streets in the same manner. The square stone walls are to be seen in remains about the temple of Augustus, also of the antique coffer-work kind, where the face and cross work is stone, and the filling up of the coffers, mortar, and rough stones.

Inigo Jones observes, that he had seen the rustic of the wall of the ancients in a house going to Naples, and that it looked very well, and that the squared stone wall made of stones of different bignesses has a grand look in many of the ancient buildings. We see in all these with what knowledge both of the nature of materials and the manner of disposing them, the ancients built their walls: what strength, solidity and beauty. We have all their materials, we shall next observe in what manner we employ them.

We build walls of part stones, or entire bricks, and sometimes face them with hewn stone, or cover them in part with plaister wrought into resemblance of such a stone covering. When brick walls stand single
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we frequently cope or cover them at the top with stone; but in examining through the whole course of the proceeding, we shall find that we have neither the strength, beauty, nor variety of the ancients in this great part of architecture. We rarely see instances of walls of entire stone rough or wrought without any facing of another kind, and it is only in the most expensive of our buildings the others make any tolerable figure; what we commonly see about houses is a facing of cut stone over a wall of ordinary brick-work, better or worse; and as to brick walls, instead of the double facing of the ancients, which was filled up between with a rougher stuff, our walls are usually faced with good brick on the outside, and wrought up a coarser kind inwardly, the inner surface not being seen when the building is finished.

In regard to the manner of constructing a brick-wall, we are to caution the young architect that in summer he lay the bricks as wet, and in winter as dry as he can; for this is the way to make them bind the better with the mortar. In summer as soon as they are laid, they are to be covered up, to prevent their drying too fast, the mortar in that case losing half its binding quality; and, for the same reason, they are to be covered yet more carefully in winter, for rain is a great enemy to the strength of mortar, and frost is worse. In all cases let him take care that the angles of his walls be well united together, for if the adjoining walls be not wrought up at the same time, they never close so well. Finally, that all the parts of the building where there are walls to be raised and finished at the same time, because then they settle equally every where, and there are none of those cracks and clefts, which are so great a blemish in the building and scandal to the builder.

Treating of walls, we should not omit to mention those inferior kinds which have been once much used, and are in some places to be met with now; for though brick and stone are the general walls at this time, they do not utterly exclude all others. In framed timber houses, there are sometimes used what may be called walls of lath and plaster; and in small buildings made altogether of wood, there are what may be called boarded walls. The plaster walls are chiefly used in ordinary timber buildings: they are composed of loam or coarse mortar spread over the lathing, which is to continue from beam to beam, and the whole is covered afterwards with a fine mortar. Sometimes the timber work is left naked, sometimes the whole is covered with lathing, and then with loam and mortar; this is the handsomest manner of doing it, and frequently in this way of using it is rough cast over, and while clean makes a pretty appearance. In what are called boarded walls, the great care is to secure them very well by painting without, and by plastering within, in which case they will endure a very considerable time, and will be no more in danger of accidents by fire than other materials.

These

These are a very inferior kind, and only fit for meaner purposes, but in a general account of walls it would have been wrong to omit naming them. We shall from these proceed to the consideration of those most expensive and elegant walls, which we raise of hewn stone for churches and other elegant buildings. In these the better the stone be wrought the smaller will be the joints, and this is a great excellence in that kind of building. We see the ancients have been so accurate in the cutting of their stone on these occasions, that in the remains of many of their great buildings we can scarce perceive a joint, but the whole looks as if of one entire rock wrought to that exactness. There is indeed thus much to be said on this head, that they in reality did work down the faces of their stones after their walls were erected, their whole care before being to cut the squares that were to join with a perfect exactness. We see proofs that this was their manner of working among their remains; in some the faces of the stones were yet rough as they were laid, and in others the very marks of the tools shew how they were wrought.

In buildings of vast extent and expence, they sometimes wrought only the imposts of arches, the capitals and cornices, leaving the rest rough as they laid it in. This was their manner of executing what we call rustic, in distinction from those walls they finished up in every part. There is nothing into the spirit of which we have less entered than the rustic of the ancients in their walls. We see they have done it, and therefore we conclude it to be right; but we should examine why they did it, and conform ourselves to the same conduct. They always used this form in their largest buildings, we have therefore no authority from them for using it in small ones.

In our stone walls for elegant edifices this smallness of the joints should be our great concern, and to this end the sides of the stone where they are to join cannot be wrought with too much care and exactness. The use of thin sheet-lead is also excellent; and upon the whole, as it concerns only buildings of great expence, it is an article in which the price of workmanship never should be spared.

Of all materials for building walls for fruit-trees, brick is the best, it being not only the handsomest, but the warmest and kindest for the ripening of fruit, and affording the best conveniency for nailing, as smaller nails will serve in brick than will in stone walls, where the joints are larger; and if the walls are coped with free stone, and stone pilasters or columns at proper distances, to separate the trees, and break off the force of the winds, they are very beautiful, and the most profitable walls of any others.

WATER-TABLE, in architecture, a sort of a ledge left in stone or brick-walls, about eighteen or twenty inches from the ground, from which place the thickness of the wall begins to abate.

WATER-

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WATER-WHEEL, is an engine for raising water in great quantities out of a deep well.

WATER-WORKS, in general, denote all manner of machines moved by, or employed in raising or sustaining water, in which sense, water-mills of all kinds, sluices, aqueducts, &c. may be called Water-works. The term Water-works, however, is more particularly used for such machines as are employed only in raising water.

WEATHER-COCK, or **WEATHER-VANE**, a moveable vane in the form of a cock, or other shape, usually placed on the steeples of churches, and other great buildings, to be turned round according to the direction of the wind, and point out what quarter the wind blows from.

WELL, is a hole under ground usually of a cylindrical figure, and walled with stone, brick, &c. and mortar; its use is to collect the water of the strata around it. The rising of water in Wells is thus accounted for. Suppose a Well be sunk at the foot of a hill to such a depth as will bring the diggers to an eruption of a spring, whose water is brought by a duct from a cavity in the hill, or otherwise from a pond, a river, the sea, &c. it is evident the water in the Well will rise from the bottom to an altitude, where the surface of the water is upon a level with that in the reservoir, and constitutes a Well. Well, in the military art, is a depth which the miner sinks under ground with branches, or galleries running out from it, either to prepare a mine, or to discover and disappoint the enemy's mine.

WELL-HOLE, in building, the hole left in a floor for the stairs to come up through.

WICKET, a small door in the gate of a fortified place, &c. or a hole in a door, through which to view what passes without.

X.

XYST or **XYSTOS**, an antique term used to express a portico of great length, in which were performed several feats of running and wrestling. The Xyst was sometimes covered, sometimes open.

This was the sense in which the term was most anciently used by the Greeks; the Romans called by the same name a long walk, a kind of isle or portico, whether covered or open, ranged on each side with rows of trees. Sometimes also it was used to express only a long walk planted with trees on each side in double rows, and making a sort of arch over

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the top, so as to form a kind of long arbour. The gladiators who practised therein, were called Xystici.

Z.

Zocco, Zoccolo, Zocle, or Socle, in architecture, a kind of stand or pedestal, being a low square piece, or member, serving to support a busto, statue, or the like thing that needs to be raised.

Zoophorus, a name by which some call the frieze of the entablature; it has its name from the custom of representing animals of many kinds upon it in carving.

At the Earnest Request of many of our SUBSCRIBERS, we shall give
a complete ABSTRACT of the

ACT OF PARLIAMENT,
OF THE
FOURTEENTH, OF GEORGE THE THIRD,
FOR REGULATING
BUILDINGS AND PARTY-WALLS, &c.

THE Preamble to the Act of the 14th of George III. recites,
That the Act made in the 12th year of the same reign, for the
purpose of regulating Buildings and Party-walls, &c. hath been found
insufficient to answer the good purposes intended thereby; and there-
fore that it may tend to the safety of the inhabitants, and prevent
greater inconveniences to Builders, and workmen employed in Build-
ings, the present Act has been made, and began to take effect on the
24th of June, 1774.

This present Act is made to repeal entirely the said Act of the 12th
of George the Third; and also so much of all other Acts whatever as re-
lates to the regulation of Buildings and Party-walls.

All irregular erections whatever built since the passing the said Act of
the 12th of George the Third, and contrary thereto, (except where pro-
secutions have been commenced, and the penalties paid) are to be alter-
ed and made in every respect conformable to the several regulations con-
tained in that of the 14th.

The King's palaces, or any building in the possession of himself, his
heirs, or successors, or employed for his use; also the Queen's palace,
or any building in her possession, or employed for her use, are exempted
by this present Act from the several regulations therein contained.

By the said Act, all other buildings whatever now built, or hereafter
to be built, are by the Act divided into seven different rates or classes.

We shall now proceed to the several regulations contained in the Act,
which we are enjoined to observe.

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R A T E S

R A T E S O F B U I L D I N G S.

In what Manner determined.

F I R S T R A T E O F B U I L D I N G S.

EVERY church, chapel, meeting-house, or any other place of publick worship.

Every house, erection, or building, for distilling or brewing liquors for sale, for making of soap, melting of tallow, dying, boiling or distilling turpentine, casting brass or iron, refining of sugar, making of glass for chymical works for sale, of whatsoever dimension the same respectively are or may be built.

Every ware-house and other building (except such as are described to be of the fifth, sixth or seventh rate), not being a dwelling-house, which exceeds three clear stories above ground, exclusive of rooms in the roof, or measures in height 31 feet from the foot-way of either of the fronts, to the top of the blocking course, or parapet.

And every dwelling house with offices adjoining, or connected otherwise than by a fence or fence-wall, or covered passage open on one or both sides, when finished, exceeds the value of 850 l.

Also every dwelling-house which exceeds nine squares of building on the ground plan.

S E C O N D R A T E O F B U I L D I N G S.

Every ware-house, stable, and other building, (except those described to be of the first, fifth, sixth, or seventh rate) not being a Dwelling-house, which exceeds two clear stories, and does not contain more than three clear stories above ground, exclusive of rooms in the roof, or measures in height 22 feet, and not amounting to 31 feet from the foot-way of either of the fronts, to the top of the blocking-course, or parapet.

Every dwelling house with offices adjoining, or connected otherwise than by a fence or fence wall, or covered passage open on one or both sides, when finished exceeds the value of 300 l. and does not amount to more than 850 l.

Every dwelling-house, which exceeds five squares of building on the ground plan, and does not amount to more than nine squares.

T H I R D R A T E O F B U I L D I N G S.

EVERY ware-house, stable, and other building, (except those described to be of the first, fifth, sixth or seventh rate) not being a dwelling-house, which exceeds one clear story, and does not contain more than two clear stories

stories above ground, exclusive of rooms in the roof, or measures in height more than 13 feet, and does not amount to 22 feet, from the footway of either of the fronts, to the top of the blocking-course, or parapet.

Every dwelling-house with offices adjoining, or connected otherwise than by a fence, or fence-wall, or covered passage open on one or both sides, when finished, exceeds the value of 150l. and does not amount to more than 300l.

Every dwelling-house which exceeds three and a half squares of building on the ground plan, and does not amount to more than five squares.

FOURTH RATE OF BUILDINGS.

Every ware-house, stable, and other building (except those described to be of the first, fifth, sixth or seventh rate) not being a dwelling house, which does not exceed one clear story above ground, exclusive of rooms in the roof, and measures in height not more than 13 feet from the footway of either of the fronts to the top of the blocking-course, or parapet.

Every dwelling house with offices adjoining, or connected otherwise than by a fence, or fence-wall, or covered passage open on one or both sides, when finished, does not exceed the value of 150l.

Every dwelling-house, which does not exceed three and an half squares of building on the ground plan.

FIFTH RATE OF BUILDINGS.

Every dwelling-house, ware-house, stable, and other building (except those not being dwelling houses, as are described to be of the first or seventh rate) which is at the distance of 4 feet, and not 8 feet from any public road, street or causeway and is detached from any other building, not in the same possession, 16 feet at the least, and not 30 feet, or connected with any other building only by a fence or fence-wall. These are of the fifth rate, and may be built of any dimensions whatever.

SIXTH RATE OF BUILDINGS.

Every dwelling-house, ware-house, stable, and other building (except not being dwelling-houses, as are described to be of the first rate) which is at the distance of 5 feet from any public road, street, or causeway, and is detached from any other building, not in the same possession, at least 30 feet, or connected with any other building only by a fence or fence-wall. These may be built of any dimensions, and with any materials whatever.

SEVENTH

SEVENTH RATE OF BUILDINGS.

EVERY crane-house, or any wharf or quay, every shamble, wind-mill or water-mill; every building situated without the cities of London and Westminster, and the liberties thereof, used for workshops, or drying places for tanners, fellmongers, glue-makers, size-makers, callico-printers, whitsters, whiting makers, curriers, leather-dressers, buckram-stiffeners, oil-cloth painters, woolstaplers, throwsters, parchment-makers and paper-makers, so long and at such times, as they are used for some or one of those purposes, and no longer, shall be deemed to be of the seventh rate, and may be built of any dimensions, and with any materials whatever; but they are not to be covered with pitch or tar, or any other inflammable material, nor ever to be converted to any other use than as abovementioned.

N. B. The act makes an exception to the materials of crane-houses, and expressly says, That the whole, or any addition thereto, shall be built of stone, brick, slate, tile, oak, elm, steel, iron or brass.

It may be necessary here to observe, That the act provides against any doubts which may arise concerning offices that belong to any building of the first, second, third, or fourth rate, and therefore says, That every such office, if detached from the building to which it belongs, and connected therewith only by a fence or fence-wall, or covered passage open on one or both sides, shall be deemed to be of the rate such building would be of, as if the same was not any ways connected or belonged to any such building.

What particularly concerns the BRICKLAYER in this ACT.

THERE are only the first, second, third, and fourth rates of Building, whose thickness of external and party-walls are described in the act.

The act directs, That every master-workman, or owner, shall give 24 hours notice to the surveyor, in whose district any building, from the first to the seventh rate, is to be altered or erected.

As buildings in general are oftener began by the bricklayer than by the carpenter, it naturally follows, that it will be the bricklayer's business to give such notice, except where a foundation is to be piled or planked; and then it becomes the business of the carpenter.

EXTERNAL WALLS.

THE Act of 14 George III. calls every front, side, or end wall, &c. (not being a party-wall) an external wall.

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The footings to the walls are to be with equal projection on each side, but where any adjoining building will not admit of such projection to be made on the side next adjoining to such building, the act allows it to be done as near as the case will admit, and this to each of the four rates.

The timbers in each rate may be supposed as girders, beams, or trimming joists, &c. which might be illustrated with an engraving, to shew their bearing on the wall, which in all cases, and in all the above four rates, may be as much as the nature of the wall will admit, provided there is left 4 inches between the ends of such timber and the external surface of the wall.

The joints of the brick-work might also be shewn, and might answer to the express number of bricks of which such wall is to be composed.

It may now be necessary here to say something further, relative to external walls.

EXTERNAL WALLS, and other external inclosures to the first, second, third, fourth, and also the fifth rate of building, when built hereafter, must be of brick, stone, artificial stone, lead, copper, tin, slate, tile, or iron; or of brick, stone, and such artificial stone, lead, copper, tin, slate, tile and iron together, except the planking, piling, &c. for the foundation, which may be of wood of any sort.

If any part to an external wall of the first and second rate, is built wholly of stone, it is not to be less in thickness than as follows.

First rate, 14 inches below the ground floor; 9 inches above the ground floor.

Second rate, 9 inches above the ground floor.

Where a recess is meant to be made in any external wall, it must be arched over, and in such manner, as that the arch, and the back of such recess shall respectively be of the thickness of one brick in length; it is therefore plain, that where a wall is not more than one brick thick, it cannot have any recess.

No external wall to the first, second, third, and fourth rate, is ever to become a party-wall, unless the same shall be of the height and thickness above the footing, as is required for each party-wall to its respective rate.

Of PARTY-WALLS.

BUILDINGS of the first, second, third, and fourth rate, which are not designed by the owner thereof to have separate and distinct side walls, on such parts as may be contiguous to other buildings, must have party-walls; and they are to be placed half and half, on the ground of each owner, or of each building respectively, and may be built thereon,

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without

without any notice being given to the owner of the other part, that is to say, the first builder has a right so to do, where he is building against vacant ground.

Party-walls, chimnies, and chimney-shafts hereafter to be built, must be of good sound bricks, or stone, or of sound bricks and stone together, and must be coped with stone, tile or brick.

Party-walls, or additions thereto, must be carried up 18 inches above the roof, measuring at right angles with the back of the rafter, and 12 inches above the gutter of the highest building, which gables against it; but where the height of a party-wall so carried up, exceeds the height of the blocking-course, or parapet, it may be made less than one foot above the gutter, for the distance of 2 feet 6 inches from the front of the blocking-course, or parapet.

Where dormers or other erections are fixed in any flat or roof, within 4 feet of any party-wall, such party-wall is to be carried up against such dormer, and must extend at least 2 feet wider, and to the full height of every such dormer or erection.

No recess is to be hereafter made in any party-wall of the first, second, third and fourth rate, except for chimney-flues, girders, &c. and for the ends of walls or piers, so as to reduce such wall in any part of it, to a less thickness than is required by the act, for the highest rate of building to which such wall belongs.

No opening is to be hereafter made in any party-wall, except for communication from one stack of ware-houses to another, and from one stable building to another, all which communications must have wrought iron doors; and the pannels thereof are not to be less than one quarter of an inch thick, and to be fixed in stone door-cases and sills. But there may be openings for passages or ways on the ground, for foot passengers, cattle or carriages, and must be arched over throughout with brick or stone, or brick and stone together, of the thickness of a brick and half at the least, to the first and second rate, and one brick, to the third and fourth rate. And if there is any cellar or vacuity under such passage, it is to be arched over throughout in the same manner as the passage over it.

No party wall or party-arch, or shaft of any chimney, new or old, must be cut into, other than for the purposes as follow.

If the fronts of buildings are in a line with each other, a break may be cut, both in the fore and back front of such building, (as may be already erected), for the purpose of inserting the end of such other external wall which is to adjoin thereto; which break must not be more than 9 inches deep, from the outward faces of such external walls, and not to be cut beyond the centre of the party-wall thereto belonging.

And further, for the use of inserting brass-headers and story posts, that are to be fixed on the ground floor, either in the front or back wall, which

which recess may be cut from the foundation, of such new wall, to the top of such bressummer 14 inches deep from the outward face of such wall, and 4 inches wide in the cellar story, and 2 inches wide on the ground story.

And further, for the purpose of tailing-in stone steps, or stone landings, or for bearers to wood stairs, or for laying-in stone corbels for the support of chimney jaumbs, girders, beams, pulloins, binding or trimming joists, or other principal timbers.

Perpendicular recesses may also be cut in any party-wall whose thickness is not less than 13 inches, for the purpose of inserting walls, and piers therein, but they must not be made wider than 15 inches, or more than 4 inches deep, and no such recess is to be nearer than 10 feet to any other recess.

All such cuttings and recesses must be immediately made good, and effectually pinned up, with brick, stone, slate, tile, shell, or iron, bedded in mortar.

No party-wall to be cut for any of the above purposes, if the same will injure, displace, or endanger, the timbers, chimnies, flues or internal finishings of the adjoining buildings.

The act also allows the footing to be cut off on the side of any party-wall, where an independant side-wall is intended to be built against such party wall.

When any buildings (the inns of court excepted) that are erected over gateways, or public passages, or have different rooms and floors, the property of different owners, come to be rebuilt, they must have a party-wall, with a party-arch or arches, of the thickness of a brick and half at the least, to the first and second rate, and of one brick to the third and fourth-rate, between building and building, or between the different rooms and floors that are the property of different owners.

All inns of court are excepted from the regulation as above, and are only necessitated to have party walls, where any room or chamber communicates to each separate, and distinct stair-case, and which are also subject to the same regulations as respect other party-walls.

If a building of a lower rate, is situated adjoining to a building of a higher-rate, and any addition is intended to be made thereto, the party-wall must be built in such manner, as is required for the rate of such higher rate of building to adjoining.

When any party-wall is raised, it is to be made the same thickness, as the wall is of, in the story next below the roof of the highest building adjoining, but it must not be raised at all, unless it can be done with safety to such wall, and the building adjoining thereto.

Every dwelling-house to be built which contains four stories in height from the foundation, exclusive of rooms in the roof, must have its party-

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wall

wall built according to the third rate, although such dwelling-house may be of the fourth rate.

And every dwelling house to be built in future which exceeds four stories in height, from the foundation, exclusive of the rooms in the roof, must have its party-wall built according to the first rate, although such house may not be of the first rate.

C H I M N I E S, &c.

No Chimney is to be erected on timber, except on the piling, plank-ing, &c. of the foundations of the building.

Chimnies may be built back to back, in party-walls ; but in that case they must not be less in thickness from the centre of such party-wall than as follows.

First rate, or adjoining thereto, must be one brick thick in the cellar story ; and half a brick in all the upper stories.

Second, third and fourth rate, or adjoining thereto, must be three-fourths of a brick thick in the cellar story ; and half a brick in all the upper stories.

Such chimnies in party-walls as do not stand back to back may be built in any of the four rates as follows :

From the external face of the party-wall to the inward face of the back of the Chimney in the cellar story, one brick and an half thick, and in the upper stories, one brick thick, from the hearth to 12 inches above the mantle.

Those backs of chimnies which are not in party-walls, to the first rate, must not be less than a brick and half thick in the cellar story, and one brick thick in every other story, and to be from the hearth, to 12 inches above the mantle.

If such chimney is built against any other wall, the back may be half a brick thinner than that which is above described.

Those backs of chimnies which are not in party-walls of the second, third and fourth rate, must be in every story one brick thick, at least, from the hearth, to 12 inches above the mantle.

These backs may be also half a brick thinner, if such chimney is built against any other wall.

All breasts of chimnies, whether they are in party-walls or not, are not to be less than one brick thick in the cellar story, and half a brick thick in every other story.

All withs between flues must not be less than half a brick thick.

Flues may be built opposite to each other in party-walls, but they must not approach to the centre of such wall nearer than 2 inches.

All chimney breasts, next the rooms, and chimney backs also, and all flues are to be rendered or pargetted.

Backs

Backs of chimnies and flues in party-walls against vacant ground must be lime whited, or marked in some durable manner, but must be rendered or pargetted as soon as any other building is erected to such wall.

No timber must be over the opening of any chimney for supporting the breast thereof, but must have a brick, or stone arch, or iron bar or bars.

All chimnies must have slabs, or foot paces of stone, marble, tile or iron at least 18 inches broad, and at least one foot longer than the opening of the chimney when finished, and such slabs or foot paces must be laid on brick or stone trimmers at least 8 inches broad from the face of the chimney breast, except where there is no room or vacuity beneath, and then they may be bedded on the ground.

Brick funnels must not be made on the outside of any building of the first, second, third or fourth rate, next to any street, square, court, road, or way, so as to extend beyond the general line of the buildings therein.

No funnel of tin, copper, iron, or other pipe for conveying smoke or steam, must hereafter be fixed near any public street, square, court or way, to the first, second, third, or fourth rate, and no such pipe is to be fixed on the inside of any building nearer than 14 inches to any timber, or other combustible material whatever.

C A R P E N T E R.

T H O S E timber partitions between building and building that were erected, or begun to be erected before the passing of the act, may remain till one of the adjoining houses is rebuilt, or till one of the fronts, or two-thirds of such fronts, which abutt on such timber partition, is taken down to the bressummer or one pair of stairs floor, and rebuilt.

No timber must hereafter be laid into any party arch, other than for bond to the same. Nor into any party-wall other than for bond, &c. and the ends of the principal timbers to the floors and roof.

No timber bearer to wood stairs, where an old party-wall has been cut into for that purpose, must be laid nearer than eight inches and an half to any chimney or flue, or nearer than four inches to the internal finishing of the building adjoining.

No timber must be laid in any oven, copper, stove, still, boiler or furnace, nor within 2 feet of the inside thereof.

No timber must be laid nearer than nine inches to the opening of any chimney.

No timber must be laid nearer than five inches to any flue of a chimney, oven, stove, copper, still, boiler, or furnace. Or nearer than nine inches, if such timber is placed nearer than five feet of the mouth of the same respectively.

No

No timber is to be laid under any hearth to a chimney, nearer than 18 inches to the upper surface of such hearth.

No timber must be laid nearer than 18 inches to any door of communication through party-walls between warehouses or stables.

All wood-work in general against any breast, back or flue, of any chimney, must be fixed by iron nails or hold-fasts, and not drove more than three inches into the wall, or nearer than four inches to the inside of the opening of any chimney.

Bressummers, story posts, and plates thereto, are only permitted in the ground story, and may stand fair with the outside face of the wall, but must go no deeper than two inches into a party-wall, nor nearer than seven inches to the centre of a party-wall where it is two bricks thick, nor nearer than four inches and an half, if such party-wall does not exceed one brick and an half in thickness.

Window frames, and door frames to the first, second, third and fourth rate, are to be recessed in four inch reveals at least.

Door-cases, and doors, to warehouses only, as are of the first, second, third or fourth rate, may stand fair with the outward face of the wall.

Every corner story post, fixed for the support of two fronts, must be of oak or stone, at least 12 inches square.

No external decoration is to be of wood, except as follows: cornices, or dressings to shop windows, frontispieces to door ways, of the second, third and fourth rate; covered-ways, or porticos to a building, but not to project before the original line of the houses in any street or way; such covered-ways or porticos, to be covered with stone, lead, copper, slate, tile or tin.

No such covered-way, or the cornice to any shop window, nor the roof of any portico, must be higher than the under side of the sill to the windows of the one pair of stairs floor.

Every other kind of external decorations to the first, second, third and fourth rate is to be of stone, brick, artificial stone, stucco, lead, or iron.

Every flat, gutter and roof, and every turret, dormer, and lighthouse, light, or other erection, placed on the flat, or roof of any building of the first, second, third, fourth, and fifth rate, must be covered either with glass, copper, lead, tin, slate, tile, or artificial stone.

No dripping eaves must be made next any public way, to any roof of the first, second, third, or fourth rate, except from the roofs of porticos or other entrances.

Wood trunks must not be higher from the ground than to the tops of the windows of the ground story, the pipes from thence upwards, must be of lead, copper, tin, or iron, and may discharge the water into channel stones, on or below the surface of the ground. Or the wood trunks may be continued down below the surface of the ground into drains, &c.

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or into brick or stone funnels, but such funnels must in every part thereof be below the surface of the foot pavement.

O W N E R S.

THOSE persons who are owners of warehouses and stables, are restricted by the act, from making any warehouse or stable whatever, to contain more than a certain number of squares on the ground plan thereof, which restriction is as follows: That no stack of Warehouses is to contain more than 35 squares of building on the ground plan, including all the external and internal walls, and so much of the party-walls as may belong to such stack of warehouses. Nor must any enlargement be made to any stack of warehouses already built or begun, so as to encrease the same beyond the said 35 squares; but if any stack of warehouses is required to be larger than above specified, there must be a party wall or walls, which must be built in every respect conformable to the rate to which such warehouses belong; and the communications therein to be by stone door-cases and iron doors.

If a stable building, it must not contain above 25 squares, and in every other respect is subject to the same rules and regulations as above described, to be observed in warehouses.

All buildings of the first, second, third or fourth rate, (except those in the inns of court, or chancery, the royal exchange companies halls, and except warehouses and dwelling-houses let at a rack rent for not more than 25 l. a-year) if hereafter converted into two or more dwelling-houses, work-shops, stables or other buildings, and made into distinct tenures on the ground floor thereof, then each of such tenements is to be considered as a separate building, and must have a party-wall or walls accordingly.

The proprietors of any stack of warehouses or stables are excepted by the act from the above regulation, and may divide their warehouses and stables, for the purpose of letting them to under tenants, without having any such party wall, if each division does not exceed the number of squares before specified.

Owners of buildings thinking themselves aggrieved by the ascertainment of the rate of their building, made by any surveyor appointed under the act, may apply to any two justices of the peace within whose jurisdiction such building is situated, and if not satisfied with their determination, may appeal to the general quarter sessions, whose determination is final.

If disputes or difficulties arise between owners, concerning the rebuilding of houses or other buildings, in separate occupations, or from their property being any ways intermixed, by being over public gate-

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ways, or otherwise, the person who is first desirous of rebuilding, may, upon giving notice in writing to the other party concerned, of their intention to apply for the judgment and determination of the general or quarter sessions, (to be next holden in the city, county, &c. where the same may happen) after 14 days from the delivery of such notice, proceed accordingly, and obtain verdict by jury.

The case must be particularly stated in the notice, and such notice is to be left at the last or usual place of abode of the party to whom the notice is addressed. If they are under any legal disability, or cannot be found, or if their building adjoining such intermixed property is uninhabited, it is sufficient if the notice is wrote in a legible hand, and fixed to the door, or some other conspicuous place of such house or building so uninhabited.

Such owners may, after 14 days from the obtaining such judgment or determination, proceed to the pulling down their own building, and may, in the presence of a peace officer, enter the ground of the other owner, in order to rebuild such parts, or the whole of any party-wall or walls, or party-arch or arches, and in such manner as determined by the jury, and may remove to some other part of the premises, any furniture, or other obstructions to the carrying on the work, and themselves and workmen to have free access during the time of working hours, till such party-wall or walls, or party-arch or arches are completed.

And if such owner or occupier, or any other person or persons, shall hinder such workmen so employed for the purposes before said, or wilfully damage the said works, they are to forfeit 10 l. to be levied, recovered, and applied, in the same manner as the penalty on church-wardens.

Within 10 days after such party-wall or walls, or party-arch or arches are rebuilt, the person who built the same, must leave with the owner adjoining, an account of the expence incurred, to his, her, or their share, by building so much of such party-wall or walls, or party-arch or arches, as by the verdict so determined to be built; and unless payment is made within 21 days after demand has been made, it may be recovered by action of debt, bill, plaint, or information, in any of his majesty's courts of record at Westminster, with double costs of suit.

Tenants or occupiers may pay the money, and deduct it out of the next payment of their rent.

When any old party-wall to the first, second, or third rate is not more in thickness than one brick and an half from the foundation to the ground floor, and not more than one brick thick from thence upwards to the top thereof, the owner of either of the buildings adjoining, being desirous of pulling down their own building, in order to rebuild, and to have a party-wall agreeable to the regulation of the act, must give
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three months notice in writing to the Owner or Occupier of the Building so adjoining, of his, her or their intention, in three months from the date thereof, to pull down such old party-wall, and erect in its stead a party-wall agreeable to the act, and at the expiration of which time, he may enter such adjoining premises, and exercise the like authority, as has been expressed in the case of intermixed property.

The same in every other respect may be done, where there is wood partitions between buildings, and the owner of one part is desirous of having a wall.

The owner who builds a party-wall, is to be reimbursed a part of the expence, in proportion as the case may be; for example, if his building is of an equal or inferior rate to that of the owner's adjoining, he is to receive an equal moiety, or at least to be paid for as much as the other owner makes use of: but if his building is of a superior rate to that of the other owner, he is only to receive such a sum as arises from valuing it according to the thickness of wall as is required to such a rate of building.

Party-walls, or party-arches are to be valued at 7l. 15s. per rod for new brick-work; and 1l. 8s. per rod is to be allowed for the old brick-work of such party wall or arch, as it contained before it was pulled down, and also to allow two-pence per foot cube for old timber.

Until the payment of the money, the property of such wall, and the whole ground on which it stands, is vested intirely in the person at whose expence the same was built.

The money is to be paid, as soon as such party-wall is made use of by the adjoining owner, where there was no building adjoining before such party-wall was built; or if there was a building adjoining thereto, then it is to be paid as soon as the party-wall is built and finished.

Within ten days after being so finished, or as soon as conveniently may be, the owner, at whose expence it was built, is to leave with the owner or occupier of the adjoining building, an account in writing, of the number of rods contained in such part of the wall as the other owner so adjoining is liable to pay; making therein the deduction (if any) of the value of the old materials according as it may happen, and also an account of such other expences as may have been incurred, in shoring up the other owner's building, or clearing away wainscot, &c. necessary for the purpose of building such party-wall; and the tenant or occupier, with whom such notice is left, may pay the money, and deduct it out of the next payment of the rent.

The party-wall is to be pulled down at the first builder's expence, which expence is not to be included in the above account, it being supposed the old materials are worth 28 s. a rod, and 2 d. per foot cube, more than the labour of pulling down.

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If the money is not paid within 21 days after it has been demanded, it may be recovered with full costs of suit from the owner on whom it has been incurred, by action of debt, or on the case, in any of his Majesty's courts of record at Westminster, wherein no essoin, protection, or wager of law, or more than one imparlance shall be allowed.

If the plaintiff gives three calendar months notice to the other owner, of his intention of bringing such action before the commencement thereof, specifying in such notice the sum for which it is to be brought, and also annexes to such notice a bill of the particulars with which such intended defendant is to be charged, then if such plaintiff recovers the full sum specified in such notice, he shall also recover double costs of suit.

When party-walls and party-arches, or party-fence-walls are decayed, and the owner of one part, thinks it necessary to repair or rebuild the same, or any part thereof, and the owner of the other part is not agreeable thereto, or is under any legal disability or otherwise, the owner so desirous of rebuilding must give three months notice in writing to the owner of the other part, or the occupier thereof, or if the adjoining building or ground is uninhabited, then to fix it on the door, and which notice is to be in form, or to the effect, following,

“Apprehending the party-wall, party arch, or party-fence wall, or some part thereof (as the case shall be) between the house, or building, or ground (as the case shall be) thereto adjoining, situate

inhabited, or occupied by _____ and my house, or building, or ground (as the case shall be) adjoining thereto, to be so far out of repair, as to render it necessary to repair, or pull down, and rebuild the same, or some part thereof: take notice, that I intend to have the said party-wall, party-arch, or party-fence-wall, (as the case shall be) surveyed pursuant to an act of parliament, made in the 14th year of the reign of king George III. and that I have appointed _____ of _____ and _____

of _____ my surveyors, to meet at _____ in _____ (being at some place within the limits of the act) on my behalf, on the _____ Day of _____ next at _____ of the clock, in the _____ of the same day, (being between the hours of six in the morning, and six in the afternoon.) And I do hereby require and call upon you to appoint two other surveyors, or able workmen, on your part, to meet them at the time and place aforesaid, to view the said party-wall, party-arch, or party-fence-wall (as the case shall be) and to certify the state and condition thereof, and whether the same or any part thereof ought to be repaired or pulled down and rebuilt.

Dated this _____ day of _____

The person to whom such notice is given, is to appoint two surveyors, or able workmen, to meet at the time and place in such notice mentioned, _____ and _____

and they together with the other surveyors (named and appointed by the owner giving such notice) may view such party-wall, party-arch, or party-fence-wall, and certify their opinion thereon.

If the owner, or occupier, to whom such notice was given, refuses or neglects to provide two surveyors, or able workmen, against the time appointed in such notice, then the owner may, within six days after such time appointed, provide two other surveyors, or able workmen, and they, together with those before-named, may proceed accordingly to the viewing such party-wall, &c.

The surveyors are to give a certificate under their hands to the court of aldermen, or the next general or quarter sessions, (as it may happen) the state of such wall, &c. and whether it is to be rebuilt or otherwise. And if not done by the major part of them within one month after such appointment, the owner may apply to one or more justices of the peace, who may appoint one other able surveyor, or workman, to be added to the others, and they may meet upon six days notice, to view such wall, &c.

Such certificate is to be immediately filed with the clerk of the peace, for which he is to receive one shilling, and a copy of such certificate within three days after being made, is to be delivered to the owner, or left at the house adjoining, or fixed on the door, if uninhabited.

The person against whom such certificate has been obtained, if not satisfied therewith, may appeal to the general or quarter sessions to be next holden in the city, county, liberty, &c. whose determination is final.

If the parties make no such appeal, or if they do appeal, and there is no order made to the contrary, then the owner who first gave the notice (of his intention, of rebuilding or otherwise) may, after fourteen days from the leaving the copy of such certificate with the owner, or at the house adjoining, proceed to the pulling down, or to the repairing such party-wall, &c. as has been so determined, and may enter the house or ground in the presence of a peace officer, and exercise the authority as is given to owners in the case of intermixed property.

Party-walls and chimney shafts may be railed by owners on one side to any height, and if the owner on the other side makes use of them in any other manner than for flues therein he or they is to pay for as much of the same so made use of accordingly, and to be levied and recovered as in the case of the first building a party-wall.

Party fence-walls, (if found) may be railed by owners on one side, but are not to be used as party-walls, unless they are of the materials, height, and thickness, required by the act to the rate of which they belong.

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The owner of party-fence-walls, or fences of wood, may take them down on one side at his own expence, and he may build a new party-wall instead thereof, but must not set more than seven inches on the adjoining ground; and the owner of such adjoining ground must not make use of it otherwise than for a party-fence wall; if he does he must pay a proportionable part of the expence in erecting it.

Notwithstanding, the owner who builds such party-wall, may have set it more on his own ground, than the seven inches on the ground adjoining, yet he is not to lose his right of soil, but the line of his property is to continue as before.

If any new party-wall is intended to be built by an owner of one part, and the owner of the other part is desirous of having chimney breasts, jaumbs and flues left therein, or to have such other recesses left, as are by the act allowed, he must give notice in writing before the wall is begun to be built, to the builder thereof; specifying in what manner such recesses, &c. are required to be left. And the builder is then to erect in a proper manner such chimney jaumbs, breasts and flues, and also leave such recesses as are required; and, as soon as completed, the owner who gave such notice is deemed to have made use of such party-wall, and from thenceforth is liable to pay the whole of the expence of erecting such work as was desired, as well as a proportionable part of the expence in erecting the party wall, to be recovered by the other owner, in case of non-payment, with full costs of suit, in the same manner as the proportionable part of any party-wall is made recoverable to the first builder thereof.

Such party-walls as are built, or begun to be built before the passing of the act, if found may remain, though perhaps they are not built according to the thickness now required; and it may happen that the house adjoining will be rebuilt with a side wall, without making use of such old party-wall; in that case, when the other house adjoining is rebuilt, or the party-wall is taken down, the owner of such house so adjoining, is not to be intitled to more than one half of the old materials of such old party-wall, nor to more than one half the ground whereon it stood, without having agreed, and made satisfaction for the other half to the owner who built such distinct side-wall; and if the parties cannot agree, the price and the matters in difference to be settled by a jury.

If the house or building so adjoining to such distinct side-wall, as above alluded to, shall be of the first, second, or third rate, or be four stories high from the foundation thereof, exclusive of rooms in the roof, and such old party-wall, not being of the thickness of two bricks in length, from the foundation to the ground floor, and from thence upwards to the top thereof of the thickness of one and an half brick in length; then such old party-wall, when either of the buildings adjoining

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is rebuilt, is to be considered as if the same had been condemned as ruinous.

If such old party-wall shall have any timber of any adjoining building laying through the same, and if when either of the houses or buildings is rebuilt, and the owner whose house is not rebuilding, will not permit so much of such timber to be cut off, as shall leave full six inches of clear brick-work beyond the end of every such timber, then such wall is to be considered, as if the same had been condemned as ruinous, and the same is to be taken down and rebuilt in such manner as has been described, in the case of decayed party-walls.

Bow-windows, or other projections to be hereafter built, or added to any building of the first, second, third, or fourth rate next to any public street, square, court, or way, must not extend beyond the general line of the fronts of the houses therein, except for projection of copings, cornices, facias, doors, and window-dressings, or for open porticos, steps, or iron palliades; and also, except windows to shops on the ground story. And the stall-boards to such windows, must not in any street or way, 30 feet wide or more, project above 10 inches, nor in any street or way less than 30 feet wide, project above 5 inches, from the upright line of the building to which such stall-board belongs.

No cornice or covering to such shop window, in any street or way 30 feet wide or more, must project above 18 inches, nor in any street or way less than 30 feet wide, project above 13 inches, from the upright line of the building to which such window belongs.

No bow-window or other projection built before the 24th of June, 1774, is ever to be rebuilt (except such projections as are before mentioned allowed to be) unless such bow-window or projection, was built originally with the house or building to which it belongs; or unless such bow, or other projection be within the original line of the street, square, court, place, or way, wherein the same is situated; in which case it must be built, together with the columns (if any) that support the same, with the same materials, as is directed for external walls.

N. B. The power of the commissioners of the paving, or of sewers for the city of London, in regard to the above matters, remain as before the passing of the act.

Where the fore front and back front of any building now built, is taken down as low as the breffumner or one pair of stairs floor, within the space of five years from each other, it is to be deemed a rebuilding, and the party-walls thereof are to be subject in all respects to the several regulations in this act.

The act however allows all external walls or external inclosures that are now built, (except roofs, flats, gutters, dormers, turrets, and lanthorn lights, or other erection on the same) to be repaired with the

same sort of materials, of which they are now erected, but if taken down to the breffumner or one pair of stairs floor, then they are to be built of the same materials, and not less in their dimensions than has been all along explained, in regard to external walls hereafter to be built.

All internal inclosures or additions thereto, hereafter to be made for separating any building of the first, second, third or fourth rate, from any other building where such buildings shall be in separate occupations, must be of brick, or stone, or artificial stone, or stucco.

CONCERNING THE SURVEYOR.

THE Surveyors are (for the City) appointed by the Mayor and Aldermen during their pleasure; and (for each County, Liberty, &c.) by his Majesty's Justices of the peace, at their respective quarter sessions during their pleasure also.

The method of valuing the several dwelling-houses of the first, second, third, or fourth rate, or for ascertaining the number of squares they contain, by which their respective rates are to be determined, becomes the business of the surveyor in whose district the same is situated; and the act directs him in two ways as follows:

If by valuation, it must be done as near as the case will admit, and notwithstanding any decay that may be in the building, it is to be estimated the same as if it was sound, and the materials thereof entirely new, and at the common current prices of materials and workmanship at the time such valuation is made, but the ground whereon such building is erected, the fence or fence-walls, any vaults under the ground, either before, or behind the building, or any lead covering or pavement over the same, or that part of the party-wall, which does not belong to such building, is not to be included in such valuation.

But iron railing and steps to areas, before or behind the house, are to be included.

When the rate is to be determined by the squares on the plan, the admeasurement is to be taken on a level at the principal entrance, and to take in no more of the party-wall than belongs to such house, so to be admeasured.

The surveyor is not required by the act to attend within the twenty-four hours notice given him from the owner, or master-workman, of his or their intention to build; the notice is only given, that he may know where any building is erecting within his district, but by his oath he must afterwards attend, from time to time, in order to see the rules and regulations in the act duly performed, and upon discovery of any breach therein, he is to give information of the same, as soon as conveniently

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If such old party-wall shall have any timber of any adjoining building laying through the same, and if when either of the houses or buildings is rebuilt, and the owner whose house is not rebuilding, will not permit so much of such timber to be cut off, as shall leave full six inches of clear brick-work beyond the end of every such timber then such wall is to be considered, as if the same had been condemned as ruinous, and the same is to be taken down and rebuilt in such manner as has been described, in the case of decayed party-walls.

Bow-windows, or other projections to be hereafter built, or added to any building of the first, second, third, or fourth rate next to any public street, square, court, or way, must not extend beyond the general line of the fronts of the houses therein, except for projection of copings, cornices, facias, doors, and window-dressings, or for open porticos, steps, or iron palliades; and also, except windows to shops on the ground story. And the stall-boards to such windows, must not in any street or way, 30 feet wide or more, project above 10 inches, nor in any street or way less than 30 feet wide, project above 5 inches, from the upright line of the building to which such stall-board belongs.

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N. B. The power of the commissioners of the paving, or of sewers for the city of London, in regard to the above matters, remain as before the passing of the act.

Where the fore front and back front of any building now built, is taken down as low as the brassummer or one pair of stairs floor, within the space of five years from each other, it is to be deemed a rebuilding, and the party walls thereof are to be subject in all respects to the several regulations in this act.

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The method of valuing the several dwelling-houses of the first, second, third, or fourth rate, or for ascertaining the number of squares they contain, by which their respective rates are to be determined, becomes the business of the surveyor in whose district the same is situated; and the act directs him in two ways as follows:

If by valuation, it must be done as near as the case will admit, and notwithstanding any decay that may be in the building, it is to be estimated the same as if it was sound, and the materials thereof entirely new, and at the common current prices of materials and workmanship at the time such valuation is made, but the ground whereon such building is erected, the fence or fence-walls, any vaults under the ground, either before, or behind the building, or any lead covering or pavement over the same, or that part of the party-wall, which does not belong to such building, is not to be included in such valuation.

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The surveyor is not required by the act to attend within the twenty-four hours notice given him from the owner, or master-workman, of his or their intention to build; the notice is only given, that he may know where any building is erecting within his district, but by his oath he must afterwards attend, from time to time, in order to see the rules and regulations in the act duly performed, and upon discovery of any breach therein, he is to give information of the same, as soon as conve-

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niently may be, to the Lord Mayor of London, or two or more justices of the peace, within whose jurisdiction the same is situated.

The surveyor upon receiving notice of a building, or of any addition to a building, being covered in, or the cutting into a party-wall is made good, and completed, must attend and survey the same, and if he finds the work has been done to the best of his judgment and belief agreeable to the act, he is (within fourteen days afterwards) to make oath thereof in writing, before some justice of the peace, within whose jurisdiction the said building or wall is situated.

The satisfaction to be made to the surveyor for his trouble in seeing the regulations of the act duly performed, is at the discretion of two or more justices of the peace, in the city, county, &c. (as the case may be) and under their hand he may be empowered to receive such sum, or sums, not exceeding the following.

For any new Building of the	Ist Rate	-	-	3	10	0
	II.	-	-	3	3	0
	III.	-	-	2	10	0
	IV.	-	-	2	2	0
	V.	-	-	1	10	0
	VI.	-	-	1	1	0
	VII.	-	-	0	10	6

For any addition or alteration made to a building of the	Ist. Rate	-	-	1	15	0
	II.	-	-	1	10	0
	III.	-	-	1	5	0
	IV.	-	-	1	1	0
	V.	-	-	0	15	0
	VI.	-	-	0	10	6
	VII.	-	-	0	5	0

Such sum so ordered is to be paid by the master-workman, or the person who caused the work to be erected, and in default of payment thereof, it is by warrant of one or more justices, to be levied by distress and sale of the goods and chattels of such master-workman, or other person (as the case may be) together with the reasonable costs and charges attending it.

Surveyors are liable to be discharged from their office, upon any complaint of their wilfully neglecting their duty, or behaving negligently and unfaithfully in the discharge thereof; and the same being made appear to the court, by whom they were appointed, it is in their power to discharge him; and for ever afterwards he is to be deemed incapable of being again appointed a surveyor under the act.

Each surveyor must from time to time leave notice in writing with the clerk of the peace, for the city, county, &c. wherein his district is situated, of the place of his usual abode.

COURT OF ALDERMEN AND SESSIONS.

All the powers and authorities by the act vested in the court of mayor and aldermen of the city of London, may be by them transacted in the outer chamber of Guildhall, according to the custom of the city.

On every application to the general quarter sessions for the county of Surry, concerning any matter to be by such sessions determined, the jury is to be impannelled, and all parties required to attend such quarter sessions at some general or special adjournment, within six weeks next after such application; which adjournment, is to be held in some convenient place in the Borough of Southwark; and that from time to time every further meeting touching all matters to be done upon such application is to be appointed by the justices within three weeks from the meeting last held.

The court of mayor and aldermen, or the court of sessions respectively are impowered by the act to impose fines on the sheriff, or his deputy, for making default in the premises; and on any person summoned and returned on the jury that does not appear at the time and place in such summons specified, or appearing, shall refuse to be sworn on such jury, or to give his verdict, or in any manner wilfully neglect his duty therein; and on any person having notice to attend touching the premises, who does not attend, or attending, refuses to be sworn, examined, and give evidence; and in default of payment thereof on demand to levy such fines, and in such manner, as other fines set by the same court respectively have been usually levied, but no fine to exceed 10*l.* on any one person for any one offence; and such fines so levied and recovered are to be applied to the use of the person making application in the suit, and to no other purpose whatever: and if any person having had notice to attend as evidence does not attend and give evidence accordingly, having had ten days notice in writing thereof, under the hand of the party on whose behalf they are wanted and his guardian, trustee, committee, attorney, or agent, having been tendered his reasonable charge and expences for such attendance, such person so neglecting or refusing to give evidence, is liable to an action on the case, to be brought by the party on whose behalf they were wanted, and in which the plaintiff may recover his damage, occasioned by such non-attendance with full costs of suit, and no other excuse is to be allowed for non-attendance, other than the law allows for witnesses legally summoned to attend; and it is in the power of the court to order such further sum (according to
their

their discretion) to be paid to any witness in proportion to the time such witness shall attend, and such witness not to be compelled to give evidence before such sum so ordered shall be paid.

The court of mayor and aldermen, or court of sessions respectively, upon receiving application from any party, for their judgment and determination in the case of intermixed property where such party is desirous of rebuilding, the said courts are respectively empowered to issue forth their precept to the sheriffs respectively; requiring him or them to impanel and return a competent number of substantial persons, qualified to serve on juries, not less than twenty-four, nor more than thirty-six; and out of such number so returned, a jury of twelve persons is to be drawn, in the same manner as juries are directed to be drawn for the trial of issues joined in his majesty's courts at Westminster, and such jury so impanelled is required to attend the said court, at such time and place as in such warrant or precept may be required, and there to attend, from day to day, till discharged by the court; and all parties concerned may have their lawful challenges against any of the said jury, but not to be at liberty to challenge the array; and the said court of mayor and aldermen, or the court of sessions respectively, are also empowered to summon all such persons to attend as may appear to them as necessary evidence in the matter in dispute, to be upon oath examined thereon; and either of the said courts may order the jury to view the place in question, in such manner as they shall direct; and to command such jury and witnesses, until all such affairs for which they are summoned shall be concluded.

Such jury is to enquire, and try, and determine by their verdict, whether the premises in dispute ought to be rebuilt or not, and if to be rebuilt, are also to determine the site of a party-wall, or party-walls, and also what party-arches may be necessary over or under any rooms of such house or houses, or other buildings so intended to be rebuilt; or are to ascertain the quantity or soil of ground, or other parts of the premises (if any) necessary to be taken from the person so desirous of rebuilding, permitting such person to erect a party-wall or walls, or party-arch or arches; and are to ascertain and award what compensation (if any) ought to be paid by either of the parties to each other, so in difference, and also to ascertain what proportion of expence is to be repaid by the parties in difference to the person so rebuilding as before said.

The court before whom the matter is brought, is to give judgment according to such verdict, and may also award to either of the parties such costs as shall seem reasonable; and which verdict, and the judgment, order, or determination is to be binding and conclusive against all persons whatsoever, claiming any estate, right, title, trust, use, or interest therein.

All such verdicts, orders, determinations, and proceedings of the said court, are to be filed on record by the town-clerk of the city of London, or by the clerk of the peace, or other proper officer, if in the county, liberty, &c. And such clerk or other officer for the filing thereof, and for a copy of the order of the court, is to be paid after the rate of twelve-pence for every hundred words, and no more, by the person applying for the same; and after being so paid, he is empowered to deliver to any person requiring the same, an exemplification under his hand and seal, and such exemplification may be read as evidence in any court of law or equity.

If any presentment is hereafter made by an inquest or grand jury in London, or by any annoyance jury within the city and liberty of Westminster, or by the jury sworn in at the court leet, held by the sheriff in his turn for any hundred or place, or by any other inquest or jury sworn within any other part of the limits of the act, that any house or building, or any part thereof is in a ruinous condition, the court of mayor and aldermen, (when such house or building is situated in the city of London, or the liberties thereof) or the church-wardens or overseers for the time being for such parish, precinct or place, in which such house or building is situated (not being in the city of London, or the liberties thereof) may upon notice of any such presentment being made, and a copy thereof laid before him or them respectively, cause a sufficient board to be put up for the safety of all passengers passing by, and to cause notice in writing to be given to the owner interested therein, if he, she, or they can be found; or if not, then to cause such notice to be fixed on the door, or on some other conspicuous part of such ruinous building, requiring the owner thereof to repair or pull down the same, (as the case may require) within fourteen days after such notice.

Oath being made before the said mayor, or some justice of the peace for the city of London, or county, &c. (as the case may be) of such notice having been given, or affixed, and the owner thereof has not paid observance thereto, the court of mayor and aldermen out of the cash in the chamber of London, and also every such church-warden or overseer, by and out of the monies in his hands, are authorized and required by the act to cause with all convenient speed, the whole or a part of such ruinous building (as may appear necessary) to be taken down and secured from time to time, as shall be needful for the safety of passengers; and may sell the materials, in order to reimburse themselves the several charges they have been at, but to be accountable for the overplus (if any) to the owner of such ruinous building, upon personal demand thereof made by such owner; and if such demand is not made to such church-warden, or overseer, before any other or others are appointed,
then

then the overplus is to be added to the monies of the poor's rate, and to be accounted for as such.

Any such owner, or their executor or administrator, is at any time or times within six years then afterwards, entitled to receive such overplus from the church-wardens or overseers for the time being, within ten days after demand thereof personally made by such owner, or his executor or administrator, and such church-warden or overseer, is required to pay the same out of the poor's rate, and is to be allowed the payment thereof in any account to be by him made to the vestry or inhabitants.

If the monies arising from such sale are not sufficient to repay the charges incurred by pulling down such ruinous building, &c. such deficiency is to be paid by the owner of such ruinous building, if he, she, or they can be met with; and if such owner refuses or neglects to pay the same, then such deficiency is to be levied by warrant, under the hand and seal of the said mayor of London for the time being, or any other justice of the peace for the said city, or under the hands and seals of two or more justices of the peace for the county, liberty, &c. (as the case shall be) by distress and sale of the goods and chattels of such owner, and if no such owner can be found, or there is no sufficient distress to be met with on the goods and chattels of such owner, then the person, or persons, who next after occupies the said building or ground, where the same stood, is required by the act to pay such deficiency of charges, and in default thereof is in the same manner liable to the distress and sale of his, her, or their goods and chattels, together with the costs of such distress and sale; but the act also acquits and indemnifies such occupiers who shall have paid such deficiencies, by allowing such payment to be deducted out of the rent, and the discharge of the persons to whom the money was paid, is equally the same as if it had been actually paid to the owner, to whom such rent was due.

All monies so recoverable in respect of any such ruinous building within the city of London, or the liberties thereof, is to be paid to the chamberlain, and to be by him placed to the credit of the cash of the said city: and if such ruinous building is situated without the city of London and the liberties thereof, then to be paid to the church-wardens, or overseers of the poor for the time being, of the parish, &c. where such building is situated, and to be placed to the account of the same, or a like rate or fund, out of which the charges so recovered were originally disbursed.

The court of mayor and aldermen, or court of quarter sessions respectively have a power, (upon application under the hand of three or more surveyors appointed under the act) to order all irregular erections whatever, built since the passing of the act of the 12th of George III. to

be made in every respect conformable to the present act, except where prosecutions may be depending in any other court.

Such order shall be made at the discretion of the court of mayor and aldermen, or quarter sessions respectively, as near as the case will admit, and in such manner as will come nearest to the purpose and meaning of the present act, and to be filed upon record by the town-clerk, or clerk of the peace, (as it may happen) of the court where such order was made, and for the filing thereof, and for every copy thereof applied for by any person, he is to be paid after the rate of one shilling for every hundred words. The order is to be delivered to the person applying for the same, or left at his usual place of abode, or with the tenant in possession of such irregular building, or to be affixed to the door or some conspicuous part thereof.

Within nine months next afterwards the person named in such order, is to cause such building or irregularity to be altered agreeable to such order, and in default thereof must forfeit 50*l.* and so on for every nine months such building or irregularity remains unaltered.

The penalty is to be recovered and applied in the same manner as that on distilling turpentine.

The defendants in all cases of informations for the recovery of penalties incurred under the act of the 12th of George III. that are now depending before the lord mayor or justices out of session, or at their respective quarter sessions, are by the act discharged and indemnified therefrom.

Any order made by the lord mayor, or by any justice of the peace by virtue of, or under the present act, or any other proceeding touching the conviction of any offender against the present act, is not to be removable by *Certiorari*, or by any other writ or process whatever, into any of his majesty's courts of record at Westminster.

Any person or persons thinking themselves aggrieved by any such order, they may appeal to the general quarter sessions of the peace for the city, county, liberty, &c. (as the case may be) to be next holden after such order is made, who are to hear and determine the matter, and their determination is to be final.

But the person or persons so intending to appeal, must immediately upon the conviction, commitment, distress, order, or judgment, or within two days afterwards, enter into recognizance to the party appealed against, before such justice or justices with two sufficient securities conditioned to try such appeal, and to abide the order of the determination at the quarter sessions.

Parishioners and inhabitants may be witnesses in any action of bill, plaint, or information, touching offences committed against the present act, either in any of the courts of record at Westminster, or upon the
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hearing

hearing and determination of any informations before the mayor of London, or other justice of peace, although they may be parishioners or inhabitants of the parish or place where the offence was committed.

P A R I S H.

The church-wardens of every parish within the limits of the act, and the overseers of the poor for any precinct or place, having no church-warden within the said limits, are required by the act from time to time for ever to make and fix, and keep in repair, (at the charge of such parish, precinct, or place) upon the pipes belonging to any water-work whatever, within the limits of the act, such and so many stop-blocks of wood with a wood-plug, or such and so many fire-cocks to go into each pipe, and to be placed at such distances, and in such and every street or place, as they the church-wardens, or overseers, for the time being, shall direct, and the top of such stop-block, or pipe, must be even with the pavement of the street or place wherein the same is fixed, in order to prevent loss of time in digging down to the pipes.

Such church-wardens, or overseers, are also required and empowered to fix any mark or writing on the front of the house nearest to such stop-block, or fire-cock, in order to point out where they are to be found.

They are also empowered to keep the instrument or key, (by which such stop-block or fire-cock is to be opened) at the house where such mark is fixed against, and also a pipe for the water to come out of the main as occasion may require; the plugs to such stop-blocks, or fire-cocks are to be kept in repair by the owners of such main or pipe, wherein the same is fixed.

If such owners shall remove, change, or alter such mains or pipes, the stop-blocks, or fire-cocks, or others like them, are to be again refixed at the expence and cost of such owners respectively; and to be placed in such manner as the church-wardens, or overseers shall direct, and the key, mark, and pipe thereof, to be removed to some other house accordingly.

Every parish within the limits of this act, is to have and keep in good order and repair, and within some known and public place in the parish, one large engine, and one hand engine; and also one leather-pipe, with a socket of the same size as the plug or fire-cock; and also a standing-cock or suction-pipe, and also to keep in some known and public place within the parish three or more proper ladders, of one, two, and three story high, for the purpose of assisting persons to escape from houses on fire.

The respective church-wardens, or overseers, in default of any or either the above premises, upon being convicted thereof before two of his
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majesty's justices of the peace for the city of London, county, liberty, &c. where the same shall happen (as the case may be) are to forfeit the sum of 10l. one moiety to the informer, and the other moiety to the surveyor, in whose district the parish so making default shall be situated, and to be levied and recovered by distress and sale of the goods and chattels of such church-wardens or overseers respectively so convicted.

The rewards to be paid by church-wardens, or overseers of any parish, &c. to turncocks and engine-keepers, where any fire happens, are to be in any sum at their discretion, not exceeding the following.

To the turncock of any water-work, whose water shall be first found, where any plug is opened, 10 shillings.

To the engine-keeper who first brings a parish or other large engine, in good order and repair, compleat with a socket, hose, leather-pipe, stand cock, and suction-pipe, 30 shillings.

To the next second parish engine, or other large engine, complete as before said, 20 shillings.

To the next third parish, or other large engine, compleat as before said, 10 shillings.

None of the above rewards however are to be paid without the approbation of the alderman or his deputy, or of two common council-men, of the ward wherein such parish is situated, where such fire may have happened; or without the approbation of one or more justices of the peace for the county, liberty, &c. where the same may happen (as the case may be) or if there is no justice, residing in such parish, precinct, &c. then by the approbation of such justice nearest residing thereto.

In default of payment of any of the above rewards so ordered by an alderman, or justice, the church-wardens, or overseers respectively, in whose parish, &c. such fire may have happened, are liable to the distress and sale of their goods and chattels in the same manner, as the forfeit of 10l. is directed to be recovered.

When a fire begins in any chimney, and spreads itself to other parts, or if the chimney only was on fire, and the above rewards have been paid in consequence thereof, the church-wardens or overseers respectively, have a power to make complaint to the lord mayor, or to some other justice for the county, liberty, &c. (as the case may happen) and who also have a power to call forth upon notice, and to examine upon oath the parties complained against, together with all witnesses touching the same, and to order and award such reimbursement to be made, as they shall think proper, which reimbursement is to be paid within fourteen days after the demand thereof, by the tenant, or occupier of the house, or by the lodger, in whose apartment such chimney took fire; and in default thereof, they are respectively liable to the distress and sale
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of their goods and chattels, to be levied under the hand and seal of such justice.

United parishes are to be deemed as one parish, as far as respects the purposes of the act.

But if any of the vestries of such united parishes, or of any other parish, within the limits of the act, at any time conceive it necessary for the said parish, in respect of the largeness thereof, to have more than one great engine, or hand engine, they may have two or more great engines, or hand engines, and are to be under the same regulations and encouragements, as the act makes and provides for, in any other parish.

The fund from whence the money is to be paid, in order to defray the charges of the several purposes of the act, is either to be out of the poor's rate, or by any especial rate to be made by the major part of the church-wardens, or overseers respectively, together with the consent of the majority of the inhabitants, lawfully assembled at any vestry or public meeting of such parish, precinct, &c. and that if so raised, the church-wardens or overseers are liable to the same pains and commitments, and the like distress and penalties for not accounting for, or paying the monies by them so raised and collected as overseers of the poor, by all or any of the laws of this land are liable.

Constables and beadles are required by this act to repair to any fire on notice thereof, with their staves and other badges of authority, in order to be aiding and assisting, as well in the extinguishing such fire, as in preventing goods being stolen, and also give their utmost assistance to help the inhabitants to remove their goods.

Church-wardens and overseers are empowered by this act to cause ruinous buildings to be taken down.

OF NUISANCES.

Those buildings which are of the fifth or sixth rate, must not be divided into distinct tenures, unless such distinct tenure is at the distance required, otherwise they are by the act deemed nuisances, and must be taken down as such.

Buildings, or additions to buildings, that are or may be erected since the present act of parliament took place, must be built according to the several regulations therein contained, otherwise the person who causes such building or addition to be erected contrary thereto, on being convicted upon oath thereof, by two or more credible witnesses before the mayor, or two or more justices of the peace for the city of London, or county, liberty, &c. (as the case may happen) wherein the same is situated, is to be declared a common nuisance.

The builder or owner, either or both of them, as the mayor or justices may require, must enter into a recognizance in such sum, as they shall think proper, that the building shall be altered or demolished within such time as the said justices may respectively appoint, and in default of entering into such recognizance, the person so making default, shall be committed to the common goal of the city, county, or liberty, &c. (as the case may happen) and there to remain without bail, till such building is altered, and made conformable to the act, or otherwise demolished, by order of the mayor, or justices respectively, and which order they are impowered to make, provided conviction was had within three months after such building was finished.

The justices of the peace so making such order have a power to sell the materials, and defray therewith the expences of pulling down such building, and to account for the overplus to the owner thereof; but if the money arising from the sale be insufficient to defray such expence, then the owner must make good the deficiency, which may be levied in like manner, as for taking down ruinous houses and putting up boards, &c.

O F P E N A L T I E S.

By this act it is enacted, that before any building, or any wall, on new or old foundations, or on foundations partly new, and partly old, is hereafter begun to be built, or if a party wall is to be cut into, the master-workman, or other person causing the same respectively so to be done, shall give twenty-four hours notice to the surveyor in whose district such building or wall is situated, and shall allow such surveyor (within reasonable hours) free access from time to time to view the same, and in default for each offence, must pay to such surveyor treble the satisfaction he would have been entitled to receive in case such notice had been given, and also forfeit the sum of 20l. to be recovered by any action, bill, plaint or information, in any of his majesty's courts of record at Westminster, by any person suing for the same, and the house or other work (as the case may happen), if not built agreeable to this act of parliament, is to be demolished, by order of the lord mayor, or justices as before said, in cases of irregular erections.

Master-workmen, or other persons causing any building to be erected, or any addition to be made, or cutting into any party-wall, must within fourteen days after such building is covered in, or the cutting into the party-wall is made good, also give the like notice again to the surveyor, and he is to survey the same, and make oath accordingly. If the surveyor of the district wherein the building is situated, cannot, or refuses, or neglects to survey the same, then such building is to be surveyed by any other surveyor appointed under the act, and the affidavit is to be filed
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with the clerk of the peace, for the city, county, liberty, &c. within ten days after the making thereof, for which he is to be paid one shilling. And all master-workmen, or other persons by whose order such work was executed, neglecting to cause such survey to be made, or such affidavit to be filed, must forfeit the sum of 10*l*. and if such affidavit is not made and filed within one month from the recovery of such penalty, then to pay a further sum of 10*l*. and so on for every month till such affidavit is made and filed, which penalties are to be recovered and applied in the same manner, as the penalty on distilling turpentine.

No person or persons shall distil or boil turpentine, or draw off any oil of turpentine and rosin, by distilling turpentine, or boil any oil and turpentine together, above the quantity of ten gallons at one time, in any workshop or place (within the limits of the act) contiguous to any other building, or nearer than 50 feet at the least, on pain of forfeiting 100*l*. for every such offence; which forfeitures may be recovered with treble costs of suit, by action of debt, bill, plaint, or information, in any of his majesty's courts of record at Westminster, wherein no essoin, protection, or wager of law, or more than one imparlance shall be allowed; one moiety whereof is to the poor of the parish, wherein the offence was committed, and the other moiety to the person suing for the same.

Shipwrights, barge builders, boat builders, or mast makers, or others concerned in building or repairing vessels, boats, &c. near the river Thames, are allowed to boil their several materials, for the purpose of repairing ships, &c. and consequently are by this act exempted from the above penalty.

Every workman or every servant to any workman, who wilfully or negligently, and without the privity or consent of his master, shall cause any building, or any thing to be done to any building contrary to the regulations of the present act, upon conviction thereof before the mayor, or some other justice of the peace for the city of London, or other justice for the county, liberty, &c. (as the case may happen) upon oath of one or more credible witnesses, or upon his own confession, shall forfeit the sum of 50 shillings, one moiety thereof to the poor of the parish where the offence was committed, and the other moiety to the informer; and if the penalty is not paid upon conviction, such offender, by warrant, under the hand and seal of such mayor, or other justice, may be committed to the house of correction, there to remain without bail, for any time not exceeding three months, or less than one month, unless the said penalty is sooner paid.

If any menial or other servant, by carelessness or negligence, cause any building whatever to take fire within the kingdom of Great Britain, and being convicted thereof upon oath by one or more credible witnesses, before any two or more justices of the peace, must forfeit the sum of

100l. to be paid to the church-wardens, or overseers of the parish where such fire shall happen, and to be by them distributed amongst the sufferers by such fire, in such proportion as they may think just, and in case such offender refuses, or in default of paying the same immediately, upon conviction, is (by warrant under the hand and seal of two or more justices of the peace) to be committed to the common goal, or house of correction, (as the justices shall think fit) for the space of 18 months to be kept to hard labour.

No action is to lie against any person in whose house, chamber, stable, barn, or other building, or on whose estate any fire begins by accident, but if any such action be brought, and the plaintiff becomes non-suited, or discontinues his action, the defendant is to recover treble costs, provided no contract or agreement between landlord and tenant, is by the act defeated or made void.

OF DISTRESS.

If any distress is made for any sum of money to be recovered by virtue of this act, the distress itself is not to be deemed unlawful, on account of any irregular proceeding therein, nor the party making such distress to be deemed a trespasser (*ab initio*), but the person so aggrieved by such irregularity may recover full satisfaction for the special damage only, by action on the case.

N. B. The Plaintiff cannot recover if tender of sufficient amends be made before such action is brought, or if no such tender was made, the defendant may with leave of the court (before issue joined) pay money into the court, and obtain order or judgment in like manner, as in other cases where defendants are allowed to pay money into court.

INSURANCE OFFICE.

The governors or directors of the several insurance offices, for insuring houses or other buildings against loss by fire, are empowered by this act of parliament to lay out such insurance money, for the reinstating such buildings so burnt down, unless the party so claiming such insurance money, shall, within 60 days next after his, her, or their claim is adjusted, give a sufficient security, that the same insurance money shall be expended in reinstating their property, so burnt down or damaged, or unless such insurance money is disposed of within that time to the other contending parties; and this is done in order to prevent persons claiming their insurance money under false pretences.

No waterman belonging to any insurance office, where their number does not exceed 30 for each office, is to be impressed into his majesty's service, either by sea or land, their names and places of abode being registered at the admiralty-office.

Prosecutions depending under the Act of 12 George III.

In all actions, Bills, Plaint-suits, or informations now depending, or that shall hereafter depend, in any of his majesty's courts of record at Westminster, against any owner, builder or workman, or person or persons, for the recovery of any penalty incurred, or supposed to be incurred, by erecting any building contrary to the act of the 12th of George III. such respective court may, upon application of the defendant, make a rule for the plaintiff to deliver the defendant, or his or her attorney in the cause, an account in writing under the hand of the plaintiff or his attorney, of the particular defect or irregularity so committed in any such building, and to make an order for the staying of the proceedings in such action, until such account in writing is so delivered, and then the defendant is at liberty to chuse whether or no he will defend such action, the same as if the present act had not been made; and if the defendant does not chuse to defend such action, then he is to enter into a rule of the court for altering such building, and to make it in every part agreeable to the regulations of the present act, and in such manner and time, as such two or more surveyors, that are appointed for the city, county, liberty, &c. wherein such building is situated, shall, by any writing under their hand, direct and appoint.

And upon such rule being entered into, and payment of the costs incurred by the suit to be taxed by the proper officer of the court, being made to the plaintiff, the court is to make an order for staying all further proceedings till the time is expired, appointed by the surveyors for altering such building in the manner they have directed; and at the end of which time the defendant may make application to the court, and if it appears upon oath to the court, that such building is so altered, and made conformable to the order and direction of the surveyors, then such defendant is to be for ever indemnified, from paying any forfeiture or penalties for not having originally built such building, according to the said act of the 12th of George III.

But if such application of the defendant is not made before the end of the next term, after the expiration of the time appointed by the surveyors, or if upon such application the proof does not appear satisfactory to the court, then the plaintiff is at liberty to proceed in the suit, the same as if the present act had not been made.

And it is also declared in the act, that where such rule has been entered into, and not complied with, it is to be looked upon as a contempt of the court, and such court has a power to proceed accordingly against the party so offending.

There is an express clause in the act, which says, that nothing therein contained shall extend to indemnify any person against whom final judgment was given before the 24th of June 1774, respecting any such above suit.

Limitation of Actions under the present Act.

No action or prosecution is to be brought against any person, or any penalty, unless the same is commenced within six calendar months next after such penalty has been incurred.

No action or suit is to be commenced against any person, for any thing done in pursuance of the act, until twenty-one days after notice in writing has been given to the person against whom such action or suit is intended to be brought, nor after the expiration of three calendar months next after the fact committed; and in every such action, or suit, whereof the cause arises within the city of London, or the liberties thereof, is to be there laid and tried, and not elsewhere. And if the cause arises without the city, or the liberties thereof, then to be laid and tried in the county of Middlesex, and not elsewhere. And the defendant, in every such action may plead the general issue, and give the special matter of the act in evidence. And if it appears the matter or thing so done was in pursuance of the act, or that the action was brought, before the end of the twenty-one days as before said, or that sufficient satisfaction was made or tendered before such action was brought, or that the suit was not commenced within the time of three months as before said, the jury is to find for the defendant, and from a verdict so found, such defendant is to have judgment to recover treble costs of suit, under the same remedy as in other cases of recovering costs at law.

Of the ÆGYPTIAN Manner of BUILDING.

WE look up to the Greeks as the fathers of science, but we are to remember in this enquiry, that there were an earlier people with whom those Greeks had intercourse ; whom they honoured as the most wise and learned of all nations, and from whom they confess, that they received the origin of their several improvements. These were the Ægyptians ; the Greeks found architecture among them, though they were the people who reduced it to a science : the orders, which are the ornament and glory of the art, are all of Greek invention, but without this knowledge of a peculiar form and proportion in their columns, the Ægyptians arrived at great magnificence in their edifices. Therefore, although we are to look no farther than Greece for the invention of regular columns, yet we may find it worth while to seek in Ægypt the first rudiments of magnificent building ; at least the first at this time known.

The whole manner of building among these people we are not to expect we can know at this time ; many have presumed to treat of it, but from imagination, not knowledge ; these therefore we reject from all consideration, but we have accounts of one magnificent kind of edifice upon better authority ; this was their banqueting-house. The Greek historians have spoke of the splendor and dignity of this kind of building ; and Vitruvius has left us an account of its structure and proportions in so correct a manner, that what we so much admire, the ingenious architect may reduce to practice. Palladio has delivered in lines, what we read in Vitruvius only in words, and he appears to have understood the Roman better than all his commentators. It must be allowed, that Palladio in his draught has introduced some things which Vitruvius does not mention, nor the Ægyptians could know ; in particular the regular Corinthian order : but with this and a few other reasonable allowances, he seems to have given us the sense of Vitruvius, and to have conveyed the magnificence of the Egyptian architecture in a very happy manner.

This author calls the building an Ægyptian hall ; and others have treated of it after him under the same name, and have tried to execute it in various places, though not very happily.

The banqueting-room of the Ægyptians, was, in its usual size, from a hundred to a hundred and fifty foot in length, and in breadth somewhat more than half its length. We will suppose, upon a medium, a hundred and twenty-five feet for its length, and for its breadth seventy feet. Upon this area they built the room in the following manner.

At the upper end, and along the two sides, they placed rows of pillars, not Corinthian columns, because they knew them not ; but tall and to-

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lerably proportioned pillars, agreeing in their measures with one another, though of no regular order; and at the lower part they made a magnificent and spacious entrance: this seems to have taken up with its ornaments one end of the building entire. We are not told there were any pillars there, though perhaps they placed two or more toward the angles on each side for uniformity, the central space being enough for entrance in the most august manner. The rows of columns were set at a distance from the wall, forming a noble portico round two sides, and the upper end of the building.

Upon these pillars was laid an architrave, and from this was carried up a continued wall with three quarter columns, answering directly to those below, and in proportion one fourth smaller in their parts. Between these three quarter columns were placed the windows which enlightened the building.

In this article of laying only an architrave over the lower columns, we are strict to the Ægyptian manner: Palladio, who, as we have observed, uses some liberties in his design of this kind of structure, adds a freeze and cornice over the architrave, making it a complete entablature. This, like the Corinthian order, is not Ægyptian, but it is a very elegant edition. We distinguish it, because we are speaking distinctly of Ægyptian building, which has in itself such sufficient magnificence, nor needs the addition of the Grecian orders.

From the tops of the lower pillars to the wall was laid a floor; this covered the portico over-head within, and made on the outside a platform, which was surrounded by a corridor with rails and balusters. This was terraced and served as a place for people to walk upon, and from this they could look through the windows down into the room.

Most who commented on Vitruvius, suppose he meant that this platform or terrace should be covered; but they certainly err. Palladio is almost the only one who leaves it open; and he is certainly right. Any covering to this terrace must have darkened the building, by obstructing part of the light to the windows; the company on the outside were not to be considered at the expence of those within, nor indeed did there require any shelter for them, for the Ægyptians were in no fear of rain.

Palladio makes the upper row of pillars to be only half their diameter out of the wall; but as there will be light enough in his way of leaving the terrace uncovered, three quarter columns may be very well allowed, and they will give an air of dignity and freedom to the whole. As the under row of columns are perfectly insulate and free, the nearer this upper row approach to the same condition, the more propriety there will be in the building; and we have laid it down before as a general maxim, that when columns must be in part engaged in a wall, as they are to be in this instance, the more of them stands free the better.

We have shewn how this kind of room may be constructed upon the true Ægyptian plan, and it will have prodigious magnificence; this we perfectly recommend, because there should be in all these things a strict truth and propriety. Those who chuse to introduce foreign ornaments may do it in Palladio's manner; but, with the regular orders, it is a composed room, and not Egyptian.

Most who have treated of this kind of room, allow it less breadth than the proportion here allotted; but there is foundation in reason for this proportion; the columns standing within, at a considerable distance from the wall, by the natural effect of light and shadow, take off from the seeming breadth; and in structures of this kind, where there is no absolute rule of proportion, the architect may always consider the apparent, as well as real shape; and consult optical, as well as geometrical rules. Sir Henry Wootton gave the hint for this, and it is perfectly right and proper.

The room being thus proportioned, should have a magnificent gate of entrance; and this, according to our strict ideas of propriety, should not be enriched with any of the orders of architecture, because they were all unknown to the Ægyptians, to whom we owe the invention of the structure, and whose memory, as the inventors, we should perpetuate and reverence.

The room will have a natural air of regularity and beauty from the just proportion of length and breadth observed in it; and it will have an aspect of vast magnificence and dignity from the columns thus placed, and from its great height, the soffit reaching above the cornice of the upper series of columns.

The Ægyptians decorated these edifices with statues, and nothing can be better than to follow their example, for no kind of roof can shew them more happily; but in this case, as in all the others, the architect of true taste will place their Ægyptian figures, that the whole may answer, not to its name, for that is a poor conceit, but to the original design, invention, and manner of building. No light will fall so happily on statues as this which will come from above, in so regular, proportioned, and uninterrupted a manner.

We are the more particular upon this subject of an Ægyptian banqueting-room, because it is not only in itself a structure that does honour to architecture, but it is a kind of building we want. It would be a very august and noble room for a coronation feast, or any other of the great solemnities.

In erecting such a building here, the architect must, as on all other occasions, take into consideration the difference of the climate, and make proper allowances, though in Ægypt or in Italy a marble pavement might answer the purpose, it would not be proper here.

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Such a room in England should have a boarded floor, and it should be carpeted for the reception of the guests ; and with us five magnificent chimney-pieces, two in each side, and one at the upper end, would add greatly to the convenience, and not impair the beauty. This is the method of accommodating the designs of the warmer and brighter countries to our own ; and, without these, many of the noblest plans and models must be useless.

Of the Houses of the ANCIENT GREEKS.

Having traced architecture to *Ægypt*, and drawn from its original source a structure of great dignity, we may pursue it to the habitations of the early Greeks, and see their manner of reducing the science to use.

Vitruvius has, with great care and correctness, collected and delivered to us all that can be certainly known on this head, and his faithful follower Palladio has very happily reduced many of his precepts to practice.

The doctrines of the one, and the application made of them by the other of these great names, we would have our architect perfectly know ; but we would not have him rest his pursuit of knowledge there. Vitruvius was judicious, and Palladio accurate in the highest degree in these things ; but let him remember that both of them, with all this praise, were no more than men : they may have erred, and this he should examine ; or they may have stopped where the thought might have been pursued farther, agreeably and usefully. This is the work of genius and attention, let him that has the one thus employ the other, and both with perfect freedom ; reverencing these as men of the first rank, but still considering them as men, upon whose already established fund of knowledge, it is not impossible but he may advance something farther useful and new.

In the account of the Greek architecture in private houses, we find great conveniences, and in that of the Romans of the same species a great deal of magnificence. In this perhaps the chaster taste of the Greeks is not without its deserved applause. They were very well acquainted with the use of lofty porticos and spacious entrances, but these they used in what might be called their sacred architecture only : they appropriated them to the temples of their gods.

The entrance to their private houses, however large and spacious they were, was always small, narrow, and plain. The whole edifice usually consisted of two courts, and several ranges of building, in which every thing was disposed with great convenience and regularity.

Their porter's lodge, if the phrase may be applied to such early time, was always placed on one side of this narrow entrance, and it was usually on the right hand ; it being to that side, people, except left-handed, usually turn. Opposite to this were placed the stables ; by

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which position their horses were always near the air for their health and exercise, and at a distance from the principal apartments, to which their smell might have been offensive, and in readiness for use. From this first entrance one came into the first or smaller court, this had piazzas on three sides, and on the fourth, which was usually the fourth side, there were buttments of pilasters, which supported the parts of the ceiling more inward. A space being thus left between the one and the other, they had places for the lodgings of men and maid servants, and such as had the principal care of the house.

Upon the same floor with these buttments, they had several regular apartments, consisting of an anti-chamber, a chamber, and closets, and about the piazzas rooms for eating, and for all the common purposes.

Opposite to the entrance was a lobby, or vestibule, through which lay the passage into the several rooms; and through this, in front, one entered a large passage which led into the larger or principal square. Round this they had four piazzas, which, in the common way of building, were all of equal height; but in more magnificent houses, they made that which faced the great entrance loftier, and every way nobler, than the other three. A nobleman of Rhodes added this to the common magnificence of their buildings: and it was thence called the Rhodian manner.

In this more noble part of the building were the apartments of the family. These were adorned with lofty galleries, and here were the best rooms; they were called the mens apartments, for in rude times these Greeks lodged their wives and female relations in the best rooms of the first court, where they had also their separate and detached place. The two sides of this larger court were kept for the reception of visitors, and servants had their appointment to attend upon them.

This was a noble species of hospitality, the master of the house entertained his guests the first day in his own apartments, but, after this, how long soever they stayed, they lived without restraint in one of these separate piazzas, and joined the family only when they chose it. Thus was the upper end, and the two sides of the great court disposed of, and its lower end disposed, being the same range of building that was the upper end of the first court, held the lady of the house, and her female friends.

This was the ancient Greek way of building the private houses of persons of distinction; and there is a great deal to be said in its favour. There was retirement and great convenience; their was magnificence within, but plain decency without; and this manner of building, tho' it covered a great deal of ground, yet was not very expensive, for they raised their several parts to no great height. The light fell in very well

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in this way of building, and there was a cleanly and chearful aspect in the whole.

Of the private Houses of the ancient ROMANS.

We have seen architecture travel from Ægypt into Greece, with great improvement in the article of convenience ; and we shall now follow it from the latter days of the Greeks to the Romans, where we shall see much pomp and magnificence introduced in the private buildings. It is from Vitruvius we are to gather what we can know from this matter, as well as the former ; but it is singular that this author, though a Roman, is not so distinct, clear, and intelligible on this head, speaking of the buildings of his own country, as in the description of those of the Greeks. However, enough may be gathered from him to form a general idea of their manner.

The Romans usually placed the principal front of their house to the south, and on this they bestowed all the decoration of expensive ornament ; they had here lofty galleries and spacious rooms, and every thing carried an air of greatness and of shew. In their country-houses they preserved the same situation, and the same front, but the inner distribution was different. At the entrance they placed the meaner and more offensive offices, after the manner of the Greeks. The first gallery which received the stranger at his entrance had on one side a passage to the kitchen, and on the other side to the stalls where they kept cattle, that their noise or smell might not be perceived within, while they were yet in readiness for all services. These stalls were placed to the left of the passage, as the stables in the Greek houses, and the kitchen to the right, which had its light from above, and its chimney in the middle.

The account given by Vitruvius, we have observed, is not very clear in this matter ; and hence have arisen great disputes among architects, who have undertaken to lay down the design of a Roman country-house. Some place the kitchen in the back part of the building, while Palladio and others give it this place in the front part.

Scammozzi, who is much displeased with Palladio's design, takes this method ; but though there are other authorities, as Pliny and Columella, whom these follow, Vitruvius is certainly in a matter relating to architecture, the most to be depended upon ; and it becomes us to say, in justice to Palladio, that whether he has or has not in all points perfectly understood that author and accurately represented his meaning, yet, in this matter of the kitchen, he certainly is more conformable to his words, than those who place it far behind.

Farther within the building were placed on one side bathing-rooms, and on the other family conveniences, in the manner of our butteries and store-rooms ; the bathing-rooms were on the left, and these others

on the right. Backwards, and full to the north, they placed their cellars, for fear of the sun ; and over these were other store-rooms.

From this part of the structure one came into the court, for in these there generally was only one court ; this was taken up by servants, and those who had the care of cattle, and on each side there were stalls for them. In front from the entrance, but very far back from all this annoyance, stood the nobler apartments for the master of the family.

Thus we see the Romans in their country-houses followed very nearly the Greek model, though in those in towns they used a very different method. In the one the magnificence was in the most remote inward part, and in the other it was displayed before the door.

F I N I S.

5 A

P L A T E I.

As we can only have recourse to fancy in the decoration of a cieling, and as persons of taste only can design them, or be adequate judges of such designs, when they are produced to the Public; we can only say, that we have engaged those gentlemen in that department who are universally allowed to excel. We think it unnecessary to explain what is so clearly represented by the copper-plate No. I. and shall only observe, that the design for a cieling is adapted to the room, of which a section is given in Plate II.

D E S C R I P T I O N of P L A T E II.

This is a section of a room adapted to the cieling in Plate I. Being intended to be hung with damask or paper, it is not decorated with the orders. But, though we recommend this ornament for the walls, proportion and uniformity should never be forgotten; as it would be ridiculously absurd to fix a Corinthian cornice to an Ionic pedestal; it is therefore necessary, in the first place, to proportion the order to the room, and afterwards to be particularly careful that the cornice answers to the pedestal. As the order then is preserved in the several parts of the walls, nothing unworthy of its dignity should be admitted in the other decorations.

E X P L A N A T I O N of P L A T E III.

- a*, Hall.
- b*, Sal. on.
- c, c*, Withdrawing rooms.
- d*, Dining parlour.
- e, e*, Breakfasting parlours.
- f*, Small parlour.
- G*, Dressing room.
- H*, Waiting room.
- I, I*, Stair cases lighted from the roof.
- k*, A small back stair-case to dining parlour, &c.
- L*, A Closet.
- m*, Library or study.
- n, n*, Water closets.

This is a plan of the principal floor of the elevation on Plate IV. designed for a villa for a person of quality. The basement or rustic story, is divided into a number of rooms for the principal servants; the kitchen and other conveniencies should be detached from the mansion, that it may not be incommoded by steam or heat: the coach house and stables should be a building answerable on the other side of the mansion; which, by the help of a colonade, will form a communication, and have an agreeable effect.

EXPLANATION of PLATE IV.

PLATE IV. is an elevation of the Corinthian order. The Corinthian, being a very rich order, never shews its elegance so perfectly, as when placed in a single series on the principal story. It should consist only of three stories, a basement floor, a magnificent principal floor, and an attic; the lower floor, by being sunk a little, makes a pedestal agreeable to the order, which should be always one-fifth of the height of the whole order. Though we recommend a rustic face in the basement story, yet the delicacy of the order, that is to be raised upon it, should always be considered, and that it ought not to be too rude and harsh. The builder should run a course of stone, about one foot three inches high, on the level of the ground, which forms a plinth, on which the rustic is to be raised; which, continuing in a straight line, forms a sub-plinth to the pedestal on which the columns are to be raised. The fascia which terminates this story should be equal in breadth to the cap of the pedestal. On this should be raised a pedestal of the Ionic order to the bottom of the windows, on which the decorations of the window should be placed. These decorations are so various, that the architect will generally make use of his own judgment in the choice of them; but he should be particularly attentive never to use columns or other decorations of a superior order, as that would be exceedingly absurd; for a more enriched order would give an ill contrast to the other columns, which are the principal object, and where the greatest decoration is required. For example, if, in this elevation, we should decorate our windows with the Composite order, the eye would naturally be offended, that those in the principal fabric had not as much decoration as the others. We therefore recommend the Ionic order, as a proper decoration for the windows on those occasions. Having explained the decorations of the windows on the principal floor, it is necessary to observe, that a flat wall wholly unornamented, carried up to the height of the columns, will have a dead aspect; to prevent which, the windows of the attic and string (or fascia) are properly introduced; and as the entablature raised upon the columns is carried along the naked wall, this gives an uniformity, very happily, to the face of the whole building. As every part should be made to correspond with the whole, in such an elegant structure as we are here describing, it should not be entirely plain, therefore a balustrade with their proper pedestals, crowned with vases, &c. will be judiciously added.

P L A T E V.

Is designed for a door for a room of state. We have endeavoured to shew how elegant a door is to be constructed upon this order, with the strictest adherence to the established rules of Palladio; and having that before you as a standard, you will find no difficulty to vary it in many respects. By fluting the columns, it gives an opportunity of introducing a capital, composed of a lighter nature, the architrave round the door being sunk, and the door pannel raised; and, by adding the architrave into the freeze, we have a large scope to introduce such ornaments, as will, with propriety, add much to its dignity; and by having the pediment open, we may, without deviating from the order, introduce a shield with proper supporters, which will give it an air of grace and beauty.

P L A T E VI.

Is a plan and elevation for a farm-house, intended to be built for a farmer of eminence in the county of Middlesex; the front extends seventy-eight feet, and is meant to ascend with three steps, with a portico over them, which will add some little degree of elegance to the buildings.

The plan is laid out in the following manner.

A Passage or Hall	D Kitchen	G Closet	K Pantry	M Stair-case
B B Parlours	E Dairy	H Lobby		for Servants
C Dining Room	F Brew-house	I Wash-house	L Great-Stairs	N Passage

The Barns, Cow-houses, Cart-houses, Stables, Pig-sties, Hen-houses, and other buildings, made use of in the farming business, form two wings at the back of the house; and, as they have a communication from a road by the side of the house, it will stand detached; and by having a grass plat, and small gravel walk up to the front, it will make it have an agreeable appearance.

P L A T E VII.

Is a Design for a CHIMNEY-PIECE.

We are in nothing left so much to the dictates of fancy, in the whole science of Architecture, as in the construction of Chimney-pieces; and it is deemed an article of such essential importance, that no room, whether plain or elegant, can, with any degree of propriety, be finished without it. We have here given two different designs, both of which are susceptible of all the grace of ornament; and in these two figures we have sketched various kinds, which are proper to either: we have decorated the one with columns, and the other with

an open pilaster, which render them designs of various species, adapted to different prices, and also to the elegance or plainness of different apartments; and as the openings of chimnies are so very various, we would advise the following particulars, viz. to have a chimney which is four feet high, to be kept as nearly square as possible; but, if there is any difference, to be wider, and to on, in proportion, down to about three feet four inches high. Columns have the best effect, when elevated on a sub-plinth, which saves the bases from damage, and gives an opportunity of corresponding with the skirting of the room, and by constructing the several parts, the architrave, freeze, and cornice, with due proportion to its height, it gives the whole a pleasing effect, and will appear elegant.

P L A T E VIII.

Is an elevation for a garden building, of the Ionic order; the columns being elevated on these pedestals, and the vases being placed on small pedestals at the top, give it a handsome appearance. This building serves very properly to terminate a view, and shut out a disagreeable prospect; its height and extent unite to answer that purpose, and the variety of its construction engages the eye with pleasure. This building will admit of a parlour, a dressing room, and a bath, by which a convenient compartition of the space may be laid out, and the utility of this structure be considered not less than its beauty.

P L A T E IX.

Two original designs for iron work for balconies, &c. Also two original designs for grates. As we mean to enrich our Work with every thing that can be useful to the Architect, Carpenter, Mason, Smith, &c. we hope these designs will be found acceptable.

P L A T E X.

The entrance into Lord Milton's, in Park Lane, Sir William Chambers was the architect.

P L A T E XI.

Is a plan, and elevation, for a banqueting room, the elevation being of the Corinthian Order. The floor being raised a few steps above the level of the ground, the pilasters must be raised upon a solid course, or continued socle of sound, firm, and even stone-work, running in a direct line even with the top of the steps. The pilasters, which ornament the front are of a middle degree of elegance. For a choice of a capital, in this case, we recommend that enriched with the true acanthus, there being none in real grace equal to that; the others are fanciful improvements of art, this is the leaf from nature; a leaf celebrated for its beauty by all ancient writers; and is indeed vastly superior in its out line in a building, where the great beauty is in adhering to the true proportions of the orders. It is also very necessary to keep the true structure of the capital. The entablature is not carried in a straight line, though it is proper so to do; yet it would then appear heavy. The form and working of the whole, shews that these pilasters are placed for beauty and decoration, more than strength; and therefore the entablature may be laid in this broken or interrupted manner. The entablature being crowned with a balustrade, will give a graceful air to the whole. We have introduced Venetian windows, which are properly calculated for shew, and are very pompous in their nature; and when executed with judgment, will add a great degree of elegance to the whole; and there will appear through every part, that lightness which is the characteristic of the order.

The Plan is laid out in the following manner.

- A Banqueting Room.
- B Withdrawing Room.
- C Closet.
- D Passage and stairs to go to apartments below.
- E Alcove for side-board.

P L A T E XII.

Is the Section of the foregoing Plate.

As these kind of rooms are used for the reception of large companies, for elegant entertainments, and variety of diversions ; these are reasons for the spaciousness of the apartment, but the rule of general proportion should be observed ; that is, the length should be one and two-thirds the breadth, and the height should be equal to four-fifths of the breadth, which is the proper proportion for such a room. As the wall is decorated with pilasters, in which are introduced various ornaments, the pilasters stand on their pedestals, which continue with the entablature round the room, which joins the whole series in a regular body ; and as nothing unworthy its dignity should be admitted, the ornaments of sculpture are appropriated ; therefore they may be introduced ; and the only rule is, that where most of this decoration is intended, the ornament to the walls should be taken from a superior order, which will fill the eye with satisfaction.

P L A T E XIII.

Is the Section of the Banqueting Room on Plate XI.

As these kind of rooms are used for the reception of large companies, for elegant entertainments, and variety of diversions; these are reasons for the spaciousness of the apartment, but the rule of general proportion should be observed; that is, the length should be one and two-thirds the breadth; and the height should be equal to four-fifths of the breadth, which is the proper proportion for such a room. As the wall is decorated with pilasters, in which are introduced various ornaments, the pilasters stand on their pedestals, which continue with the entablature round the room, which joins the whole series in a regular body; and as nothing unworthy its dignity should be admitted, the ornaments of sculpture are appropriated; therefore they may be introduced; and the only rule is, that where most of this decoration is intended, the ornament to the walls should be taken from a superior order, which will fill the eye with satisfaction.

P L A T E XIV.

Two designs for coloured ornaments for pannels, curiously coloured. These coloured ornaments are in the present reigning taste, and were designed by Mr. Carter.

P L A T E XV.

Two designs for vases for chimney-pieces, dressing-tables, &c.

P L A T E XVI.

A Design for a Gothic Temple,

P L A T E XVII.

The Plan of a Town-house of a Person of Distinction.

- A the Hall.
- B the Dining Parlour.
- C Withdrawing Room.
- D D small Parlours.
- E Dressing Room.
- F Library or Study.
- G G Closets.
- H Water Closet.
- I Waiting Room.
- K Passage.
- L Grand Stairs.
- M Back Stairs.

P L A T E XVIII.

The Elevation of a Town-house to the Plan on Plate XVII.

P L A T E XIX.

Plan and Elevation of a Design for a Mausoleum.

A Mausoleum, though seldom used among the moderns, among the antients was a place solely appropriated for the depositing of their dead, whose bodies being first burned, the ashes were gathered in an urn, and placed in small niches in the catacombs, with an inscription either on the urn or over the niche. The reviving this custom in the present times we think will not be amiss upon two accounts; first, the building will have an elegant appearance, in whatever situation it is placed; and secondly, will be more decent and reverential than the present method of depositing the body, which, after the ceremony, is without any concern thrown in an irreverend manner in a poisonous vault under a church, the resort of rats and other vermin, which fills the mind with very disagreeable sentiments of the situation of our much lamented parents, &c. relicks. — Now this design of the Mausoleum prevents those inconveniences and defects; for here we repose the bodies in a decent manner; they being placed in a recess called catacombs, with a door before it, which opens at pleasure; and if any person, whose father, mother, &c. as he lays thus silently waiting the last tremendous day, should wish to contemplate their former happy hours with them, or to reflect on and frame their souls for quitting this transitory life, where will they find a place more suitable for

E

such.

such ideas than this?—In this solitary mansion they will find true monitors who will not flatter. We have not introduced windows, thinking it more suitable to the funeral ceremony to have lamps placed in different parts of the building, which will cast a religious gloom over the whole place, and inspire the auditors with proper ideas for the awful scene before them.

A Portico.

B Colonnade, which descends one step into the body of the church C.

D D Stairs leading to the catacombs.

E Landing-place, where the corpse is rested during the ceremony.

F A room for the use of those who assist at the funeral.

G Private doors to ditto, that is, doors which break through the ornamental part of the building, as the pilaster, or ornamented pannel, &c. and is so contrived, when shut, to have no appearance to the stranger's eye of being an open way to any particular place; which methods are made use of, when you could not either with propriety, or the design will not admit of shewing a regular door-case.

H Stair case, leading either to the right or left, to the gallery over colonnade B.

I Porches or Logias, for the reception of those who wait to see the ceremony.

K Niches, where may be introduced, according to fancy, vases or urns, with the inscription of those who are deposited below in the catacombs, as numbers of the visitants may not chuse to descend too near the mouldring clay of their once fellow creatures.

P L A T E XX.

A Design of a Town-house for a private Gentleman.

Elevation and plan of hall floor.

The basement comprehends a kitchen, butler's pantry, house-keeper's room, servants room; and indeed the kitchen, scullery, &c. may be under the flat or yard behind the house.—Upon the hall floor, A Porter's hall. B Library. C Dining-parlour. D Great stair-case. E Back stair-case. f a pyramidical stove, placed in a large niche, which will have in such a place as a hall a much better effect than the common method of grates, &c. g door leading to yard, water-closet, &c.

One pair of stairs; a drawing-room, lady's dressing-room, &c. Two pair of stairs; a bed-chamber, and common dressing or bed-room for children.

The rooms for servants are designed to be in the roof, and receive light from the gutter, &c.

The bottom of the windows on the first floor are level with the floor, to which is added neat iron balconies.

P L A T E XXI.

Section of the Mausoleum, and Plan of the Catacombs, on Plate XIX.

A The stair-case leading to the catacombs.

B Landing-place where the corps rests during the ceremony.

C C C, The arched way, or arcade, under the Mausoleum.

D D D, The catacombs where the corps are placed.

E E, Section of ditto.

P L A T E XXII.

Designs for Entablatures for Rooms, &c.

F I G. 1.

A Design for an Entablature for a Drawing or Dining-room.

F I G. 2.

A Design for an Entablature for a Lady's Dressing-room, the frieze of which must be of painted Ornaments.

F I G. 3.

A Design for an Entablature for a Hall.

P L A T E XXIII.

A Design to terminate an extensive View in a Park or large Garden.

Such a design as this, beheld from the mansion of the possessor, will strike the eye with delight ; the sight being carried over the opening lawn, and through the lengthening vista, is at last agreeably brought to the pleasing object.

The figure at the top is Flora, a proper emblematical figure for the situation. The oval tablet in the middle of the column is for an inscription, when built and by whom ; with the addition of some few poetical lines, adapted to the place and design ; the subjects of the basso relievo on the pedestal must be pastoral.

The introducing a fountain issuing from the mouth of the lion on the pedestal, which, with a murmuring pleasing noise, falls gently into a semi-circular basin, will at once not only please the eye and ear, but be of great utility for refreshing cattle, &c. For the distance of this object from the house, the utmost limits may be taken of the park or garden, where generally the publick road runs, in the centre of which this pedestal is recommended to be erected. At the extremity of the garden must be a haw-

F

haw,

haw, which will obstruct the people's entrance, and not interrupt the sight of the pedestal.

The sphinx is an emblem of care and watchfulness.

A A The semi-circular basons, for the reception of water from the pedestal.

P L A T E XXIV.

Of Brick and Stone Arches.

In this plate are exhibited three different designs, both in brick and stone, with the method of rusticating, &c. Figure 1, is an arch of brick, and fig. 2. an arch of stone, both of them being semi's; the centre where all the joints have their sommerings is at *a*, as the dotted lines will shew. The semi is certainly the strongest, and has the most agreeable effect of any other arch; this is allowed by all the best writers on this science, because an arch which will sustain itself, will more easily sustain an additional weight: it is impossible for any arch to have the same pressure on the top, bottom, and sides, which proves that none can equal the semicircular for support. Fig. 3, and 4, are elliptical arches; the sommering of each are to the different centres, from which the different curves are struck, but where an arch is taken from more than one centre, it cannot be in equilibrio; and the difference of this you may form a judgment of; indeed the difference being so great in their beds, must occasion a very unequal pressure; for if their joints or beds are unequal, the pressure will consequently be so. In this kind of arch, the stones that should be at the top are at the bottom; the reason is clear, because the nearer the stones at the top come to a parallel in the joints or bed in the upper part of the arch, the weaker it is, and if the spandrells and haunches are not sufficiently secured, the stones that are nearest the top are in the greatest danger of falling, as it will naturally spring at *b*.

Fig. 5, and 6, are segments, or parts of circles, whose joints sommer to their centres, which is exactly the same height with an elliptical arch, and yet is certainly stronger, they being nearer to the line of lateral pressure, therefore bear with greater force to the foot of each other. This will throw the whole weight more in the middle of the pier, which will not be so in the ellipses, and the stones being all worked by one mould, as in the semi-circular, and taken from one centre, which will form all the joints alike, when fixed in their places, they will have equal weight on each of them.

P L A T E XXV.

The Elevation of a Design for an Hospital, with the Plan of the Hall Story.

A Hall.	L Water-closet for Men.
BB Grand Stair-cases.	M Water-closet for Women.
CC Passages or small Rooms leading to the Wards.	N ditto for Men Patients.
DDD Men's Ward.	O ditto for Women Patients.
EEE Women's Ward.	P Circular Piazza.
FF Rooms for Nurses.	Q The Area.
GG Private Stair-cases.	R A circular Basin for Water.
H Saloon.	S S S S Closets for the Nurses.
I Governor's Room.	The Section of the Hospital, with the plan of the principal Story, will be given in the next Number.
K Governess's Room.	

P L A T E XXVI.

Plan and Elevation of a Design for a Thermæ, or public Bath.

Who can reflect on the general utility and magnificence of the Roman baths, without being lost in amazement, that there should be nothing in these days on a similar plan ! Buildings of that kind, exclusive of the elegance and magnificence which they display, would be conducive to health, and become the theatre of polite exercises and amusements.

Baths were held in such a degree of estimation among the Romans, that Ammianus Marcellinus observes, there cannot be a greater instance of their magnificence and grandeur, than the baths that were built in Modum Provinciarum, as large as provinces.

Seneca speaking in this respect, says, his countrymen were arrived to such a pitch of fondness for this healthful and favourite recreation, that in their baths they scorned to set their feet on any thing but precious stones. And Pliny tells us, the very women must have their seats of solid silver.

A description from the poet Statius's poems upon the baths of Claudius Etruscus, steward to the emperor Claudius, may with great propriety be introduced here.

Nil ibi plebeium ; nusquam Temesæa videbis
 Æra, sed argento felix propellitur unda,
 Argentoque cadit, labrisque nitentibus instat
 Delicias mirata suas, et abire recusat.

G

In

In English thus,

Nothing there's vulgar, not the fairest brass,
 In all the glittering structure claims a place.
 From silver-pipes the happy waters flow,
 In silver cisterns are receiv'd below.
 See where with noble pride the doubtful stream
 Stands fix'd in wonder on the shining brim;
 Surveys its riches, and admires its state;
 Loth to be ravish'd from the glorious feat.

This design is to be considered under two heads; to serve both for a hot and a cold bath. Which distinction may be made by allotting particular days for each purpose.

The bathing room, rooms for conversation, dressing, laconicum, &c. &c. are all on the principal story, which are lighted from domes in each room.—The offices, cisterns, furnaces for giving the bath and other rooms the particular heats required, are upon the basement story.

Upon the day appointed for cold bathing, the bathers resort to the bath, enter the hall A, and producing the subscription ticket, are admitted into the saloon B, or room for conversation, reading the news, &c. C bathing-room; when agreeable to bathe they may retire to the rooms D. D. DDD, where they undress and make ready to bathe: when that is over, and they are dressed again, they next are to visit the room for refreshment E. F the alcove where the refreshments are given; G, room for the servants attending on the alcove F. H retiring room, previous to having given orders to their servants to attend with the carriage. I lesser hall for the porter to prepare the servants to attend on their masters. K domes to admit the light into the rooms. LL water-closets. *m m* Stairs leading into the bath. *n n* large niches for seats. *o* stairs leading down to the offices below. *p* stairs leading down the area to the offices below. *q* piazzas for servants.

Having thus gone through, in a regular progression, all the rooms proper for a bath and their uses, we proceed next to shew their uses on those days appointed for warm bathing.

Having the water in the bath, (which issues from a cistern joined to the side of the bath under room B) in its proper heat by means of a furnace under the above mentioned cistern; and all the other rooms brought to the heat required, by means of furnaces underneath, which forces the heat into fiews in the walls, &c. and having all the other necessary preparations ready, the bathers resort to the bath as before. The first degree of heat being in the hall A, next saloon B, then dressing-room DD, then

then bathing-room C; two of the rooms D may be for the laconicum or sweating-rooms. The refreshing-room E is of a less degree of warmth than the other rooms abovementioned; the retiring-room H still cooler, which prepares the bather for leaving the bath. Thus from the greatest heat they are brought gradually to their natural degree of warmth, whereby no cold can effect them; whereas by a sudden transition from extreme heat to cold many ill consequences ensue.

P L A T E XXVII.

A Plan and Elevation of a Design for a Cottage or rural Public House.

- A Portico.
- BB Rough bodies of trees to represent columns.
- C Kitchen or Tap-Room.
- D Stair-case ascending to the first Floor.
- E Passage leading to the Yard.
- F Stairs descending to the Cellars.
- G Parlour.
- H A Room, comprehending the Bar, Pantry, &c.
- I Washhouse, Brewhouse, &c.
- K Copper.

The one pair of stairs is reduced to the body (or octagon) of the house, which is divided into three rooms for the master and mistress; another for the maid and children, and the third for a man. These rooms may have communication with the roofs over the parlour and washhouse, &c. for depositing stores, lumber, &c.

P L A T E XXVIII.

Figure 7 and 8 are straight arches of stone and brick; At *a* in fig. 7 and 8 are the centres where all the joints have their sommerings, which may be seen by the dotted lines; fig. 8 is a strait arch of stone, which may be used where no buttments are to be had; the stairs are tied together with iron, cogged, and run in with lead, to prevent their spreading. The dividing of this may easily be seen by referring to the figure.

Figures 9 and 10, semi-elliptical arches on the conjugate diameter; the courses in fig. 9 are divided on the outside curve, *a, b, c*. Figure 10 is a stone arch, which is equally divided on the inside curve, whose centres are *x* and *y*; the sommering of each course will appear clear, by inspecting the dotted lines.

P L A T E XXIX.

Section of the hospital on plate 25, with the plan of the principal story.

The section is taken through the wards, nurses room, circular piazza, and area: the dotted line Z in the plan shews its course.

In the basement story we see the vaults under the street for coals; the areas, and stairs down to them; the house-keeper's room, cook's-room, (being under the center of the wards) rooms under the nurses rooms: circular passage (under piazza) which receives light from grates in the footing of the piazza: large vaults for stores, &c. (under the center area, or court-yard)—the basin for water; the drains on each side for receiving the rain, &c. which discharge themselves in the common-shore.

In the hall story we see the wards, nurses rooms, piazza, area, or court-yard, &c.

In the principal story, we again see the second tier of wards, nurses rooms, and the flat over the piazza.

In the roof we see rooms for patients or nurses, servants, &c.

A Committee room.

B Secretary's office.

C Secretary's room.

D E Withdrawing rooms for the committee.

FFF Men's ward.

GGG Women's ward.

HH Grand stair-cases.

K Water-closet for women patients.

L do. do. for women.

M do. do. for men.

N Water-closet for men patients.

OO The flat over the piazza.

P Physician's room.

Q Surgeon's room.

R The theatre which receives light from the windows in the attic story: the height of the theatre extending above them.

S Place for the operations on the patients, &c.

TT The avenues to ditto.

VVV Seats for the auditory.

W The open part of the building.

XXXX Closets for nurses.

P L A T E XXX.

Elevation and plan of a design for an Insularium, or house of pleasure, to be erected on some small island in the park, at a convenient distance from the main building: dedicated to the deities of learning, painting, music, love and friendship.

The Insularium, is meant for the reception of company immediately after dinner. Being surrounded with wood and water, will render the fabric extremely cool and refreshing.

When fatigued with heat, or exercise, the bath will exhilarate the spi-

H

rits,

rits, brace the nerves, and enable the company to pursue their amusements and exercises with alacrity and vigour.

- | | |
|--|---|
| AA Porticos, places for exercise, dancing, &c. | L Refreshing-room. |
| BB Tablino, or entrance into the saloon. | M Servants hall. |
| C Saloon, where the concerts are held. | N Passage for servants into the saloon, &c. |
| DDDD Oici, or small halls leading to the different apartments. | O Room for preparing necessities for the company. |
| EE Stair-cases ascending to the gallery over the oici's D. | P Water-closet for company. |
| F Bath. | Q Do. do. for servants. |
| GG Drawing-room. | R Sky-light. |
| H Library. | S Billiard-table. |
| I Billiard-room. | TTTT Book-cases. |
| K Cabinet. | U Sky-light. |
| | W Footing round the bafon in the bath. |
| | X Stairs leading into the bafon. |

P L A T E XXXI.

A design for a monument.

P L A T E XXXII.

Figure 11 and 12 are rampant semi-circles; the bricks being divided in fig. 11, on the out-side, as in figure 9, from the centre *a*, strike the curve *b*, *e*, and *d*, *e*, which intersect with the rampant curve, struck from the center at *c* and *e*; the centring of the brick are at *a*, *f*, *g* *b*. Figure 12 is a stone arch, *c* being the height of the ramp. from *a*, and *a*, *b*, is the width of the arch; in the middle of *a*, *b*, erect the perpendicular *e*, *f*, then draw the line *c*, *b*, and *g*, *b*, parallel to each other, and at the point *b* erect the perpendicular to intersect *g*, *b*, at *b*, which is half the width of the arch; then draw the lines *c*, *f*, and *f*, *b*, then at *i* on the line *c*, *f*, and at *k* on the line *b*, *f*; at each point erect the perpendicular *i*, *l*, and *k*, *m*, then the points of *l* and *m*, are the centres to the arches *c*, *f*, and *f*, *b*, which divide into rusticks as in the figure.

Figures 13 and 14 are Gothic arches. Our intention in this work being to make every thing as clear as possible to the meanest capacity, we have introduced a number of arches; as we mean to pass over nothing without taking notice of it: these arches are but seldom used, but we have introduced them to render our work the more generally useful. The brick arch is divided on the outside curve as before, in the above figures, and the different centres and dividing the arch will appear, by applying to the base line, the dotted lines, and figures.

P L A T E XXXIII.

The Elevation and Plans of a Design for a Pavillion to be erected in the Center of a grand Canal.

A Plan of the Pavillion.

B The Loggia.

C C The Colonnades

D D Piers of the Loggia.

E E E E Stairs leading to go from the water.

The dotted lines round this plan shew the course of the iron-work to prevent people's falling into the water.

F Plan of the foundation.

G G The arch which runs thro' the Pavillion.

H H The arches which cross the Pavillion.

I I I I Places for swans, ducks, &c. to roost and lay their eggs in.

P L A T E XXXIV.

The longitudinal Section of the Refreshing-room in the Bath (Plate 26.)

P L A T E XXXV.

The Elevation and Plan of a Design for a Malt-house.

A₁ The first story.

B Cistern for wetting the barley.

C Pump.

D The floor to lay the barley out to work, after being taken out of the cistern.

E E E E Posts to support the floor above.

F The kiln.

G The plate to hold the fire.

H Private door to go into the kiln.

I Malster's room.

K His bed.

L Room for malt, previous to its being taken away.

M Stairs to go up above.

N Mill-house.

O The hopper.

P The track of the mill-house.

Q Stable.

R R Stalls.

S Manger.

T Cart-house.

V V V V Steps to go up above.

W Coal-room.

X X X These dotted lines shew how much the loft above extends over the ground line of the kiln.

I

A₂ The

- | | |
|--|---|
| A ₂ The second story. | G Skreen to let the malt down into the room L in the first story. |
| B Opening in the floor to take the barley up. | H Store-loft for malt. |
| C The second floor to lay the barley on to dry a second time. | I Mill. |
| D Drying loft for the barley over the kiln, the flooring being grated iron, to admit the heat to the barley. | K Barley loft. |
| E Ventilator. | L Hole to let barley down into the cistern B in the first story. |
| F Dry loft for the malt. | M Stairs to go down below. |
| | N Granary. |
| | O Hay-loft. |
| | P P P P Steps to go down below. |

P L A T E XXXVI.

Two Designs for Iron Railing.

P L A T E XXXVII.

A Design for the Cieling in the Bathing Room, Plate 26.

A A A A Projection of the Cornice.
The large Fan in the Center is the Sky-light.

P L A T E XXXVIII.

The Elevation and Plan of a Design for a Gothic Observatory, to be erected on a Mount, for the Conveniency of taking Views, consulting the Stars, &c.

P L A T E XXXIX.

The Elevation and Plan of the Hall Story, of a Design for a Gentleman's Villa.

- A A Porticos.
- B Hall.
- C Anti, or Waiting Room.
- D Library, or Gentleman's Dressing Room.
- E Breakfast and Dining Parlour.
- F Saloon, the height of which extends to the top of the dome, and receives light from the circular windows, as seen in the elevation.
- G Drawing Room.
- H Retiring Room.
- I Room for making Tea, &c.
- K K K K Oeci's, or small halls leading to the different apartments and stair-cases, lighted by semi-circular headed door-cases, fronting the stair-cases.
- L Gentleman's stair-case, lighted by a sky-light.
- M Servants stair-case, lighted by a sky-light.

K

N These

N These dotted lines shew the breadth of the gallery (on the upper story) to give admittance to the several rooms.

O Water-closet.

P P Book-cases.

The floor above consists of bed rooms, Lady's dressing room, nursery, &c. the offices on the basement story.

P L A T E XL.

A Design for a Chimney Piece.

P L A T E XLI.

Section of the Bathing-room (on Plate 26) taken from the Conversation-room to the refreshing-room.

P L A T E XLII.

The Elevation and Plan of the principal Story, of a Design for a Hunting Villa; to be situated in the Center of a forest.

This Villa is for the meeting of company in the morning previous to the sport, and afterwards to return to and finish the diversions of the day, by partaking of an elegant rural repast. To add something new to this design, in the center of the Saloon is contrived a circular false flooring ten feet diameter, which (when the entertainment is ready) is to be opened in the middle, and each half to slide into the thickness of the flooring; a double stair-case will then be discovered for the conveniency of servants coming up and down, having an ascent two ways, up which are brought chairs and tables, so contrived as to join together, and form a large circular table, round which the company being placed, the dinner is served up in the same manner, the servants waiting in the middle; after which every thing is removed, and the false flooring closes as before.

The Offices are underneath.

A A A A Steps ascending to the Collonade.

B B Collonade.

C C C C Columns, being rough bodies of trees.

D Saloon.

E This line shews the extent of the false flooring.

F Stairs to go up.

G Stairs to go down.

L

H Well

H Well of the Stair-cases.

I Footing off for the servants to wait in.

K Circular Table, round which the company sit to dine.

L Withdrawing-room.

M Dressing-room.

N Water-closet.

P L A T E XLIII.

Two Designs of Iron-work for Door-cases or Frontispieces.

P L A T E XLIV.

Section of the Side opposite the Alcove, in the Refreshing-room in the Bath, Plate 26.

The public are desired to observe, that by taking Plate 41 of the section of the bathing room, and placing Plate 34 of the section of the alcove side of the refreshing room, on its right side, and the above Plate 44 on its left side, they will have a compleat section through the whole building, it being taken through the conversation-room B, bathing-room C, and refreshing-room E of Plate 26.

Note, the sides of the conversation-room are finished in the same manner as the refreshing-room, excepting that side where the alcove is.

P L A T E XLV.

Section of the side of the library (opposite the windows) in Plate 39, taken through the book-cases on each side of the room.

P L A T E XLVI.

Two Designs for capitals in the Ionic and Doric taste.

P L A T E XLVII.

The Plan and Elevation of a Windmill, for draining the Water off the Fens, near the Island of Ely, Cambridgeshire.

It is situated on the edge of the river, (in the road to Ely) which surrounds the island of Ely, to which drains being cut, and the waters from off the lands running into them, the mill, by its working, empties the drains and forces it into the river: thus, by continually exhausting the water in the drains, the lands are kept dry, which, for want of this useful and simple invention, would be constantly laid under water, and large tracts of rich pasture rendered useless.

A Perpendicular Spindle, which turns the trundle B below and disto above

B The Trundle

C Cogg Wheel

D Its Cistern to keep it dry

E Horizontal Spindle which turns the cogg wheel C, and the large wheel F or scoops

F The Scoops or Wheel that forces the water out of the drains

G Its Chamber, or contracted part of the drains

H Water driving out of the

chamber (by the turning of the scoop wheel) into the river

I Mill-watcher's bed

K Fire Place

L Ladder to go up the mill.

In the elevation is seen the scoop wheel, one half being above the surface of the water, the other half under.

The dotted line shews its extent, it is covered all round, except the small opening seen in this elevation for the discharging the water.

P L A T E XLVIII.

The longitudinal Section, and Side-front of the Infularium, on Plate 30.

This section is taken through the passage N, the stair-case E, the saloon C, the other stair-case E, and the bathing-room F. Having half-way ascended the stair case on the left, you enter into the picture gallery, being over the servants hall, passage, and the room for preparing necessaries: it is of the same form as the bathing-room, and receives light from above in the same manner.

P L A T E XLIX.

The Plan and Elevation of a Design for a Farm-house and Buildings adjoining.

It has long been observed, that farm-houses and their adjacent buildings have always been laid out in an irregular, injudicious manner, presenting to view a very disagreeable object; one part generally obstructing the business of the other, and frequently putting an entire stop to the work carrying on in a large farm-yard; in order to remove these difficulties, and render the disposition of the building pleasing to the eye, this design is contrived at once to have every convenience properly situated, that every part may have a ready and easy communication with the other; and at the same time to be ranged in a grand (tho' simple) and uniform manner; the possessor having all the business brought under his own inspection, as his office superintends the whole.

A 1st Great Gates or Entrance
into the Yard before the House.

B B Common Doors

C Hall

D Stair-case

E Best Parlour

F Common Parlour

G G Passages

H Farmer's Room or Office

I Kitchen

K Scullery

L Stairs for servants

M M Covered Rooms leading to
the different Buildings

N Dairy, descending a few steps

O Its Shelves

Q Pantry, descending a few steps

R Its Shelves

S Laundry

T Rooms for Servants to dine in,
and for sitting in, &c.

U Brewhouse and Bakehouse

N

V Oven

V Oven
W Copper
X Pump
Y Stables
Z Arched way for Carriages to go in and out.
A2d Cart House
B2d Cow House
C2d C2d Places for hogs, poultry, &c.
D2d D2d Places for firing &c.
E2d E2d Steps to go up above
F2d Pond
The Bed-chambers are on the upper floor of the house

The Cellars, &c. under the Hall-story.

Hay loft, over the Stable.

Granary, over the Cart house.

The Barns, not being immediately necessary to be adjoining to these buildings, may be at a convenient distance. They would have been introduced here, but the Plate not admitting such an extensive design, they are omitted.

In a future Number will be given an elevation of the whole buildings taken from the entrance to the cow-house.

P L A T E L.

The Plan and Elevation of a Design for a Green House.

A The Plan of the Green House.

B Gardener's Room for Utensils, &c.

P L A T E LI.

The Plan and Elevation of a Design for a Gothic Pigeon House.

A Half the Plan.

B B Pigeon Holes.

P L A T E LII.

The Plan and Elevation of a Design for an Entrance into a Gentleman's Park.

- A Saloon.
- B B Passages.
- C C Porter's Lodges.
- D D Bed Rooms.

P L A T E LIII.

The Plan and Elevation of a Hot-House.

- A A A The Walk round the Flue.
- B B The Flue.
- C The Place where the Fire is made.
- D The Chimney.
- E The Place where the Trees, Flowers, &c. are placed.

P L A T E LIV.

A Design for a Stove, which fills up the whole Opening of the Chimneys, except the Aperture where the Fire is made.

P L A T E LV.

Designs of Mouldings for Imposts.

- Fig. I. Mouldings for a Drawing Room.
- Fig. II. Mouldings for a Parlour.

P L A T E LVI.

The traverse section of the great stair-case in the design of the gentleman's town-house, Plate 20, with the plans of the stair-cases on the different stories.

A correspondent, who signs himself W. N.—has requested designs of sections of stair-cases, and as the public have seldom been favoured with publication of that kind, we have complied with his request; and to make them the better understood, we shall be somewhat particular in the description, to render this difficult part of design in architecture as plain as possible to the generality of our readers.

Description of the Section of the GREAT STAIR-CASE.

1st, Hall story; 2d, One pair of stairs; 3d, Bed chamber story; 4th, story in the roof.

On the hall story, we see the front of the great stair-case ascending to the one pair, the section of the door on the left hand leads to the dining parlour. Door under the stair-case leads to back stairs.

On the one pair of stairs story, is only the landing which leads to the different rooms, the section of the door on the left hand leads to the ladies dressing-room, over the dining parlour.

On the two pair of stairs story, is only a landing leading to the bed chambers—the section of the door on the left hand leads to the best bed-chamber, over the ladies dressing-room.

On the three pair of stairs (or story in the roof) is the coved sky-light, the glass door behind which (coming from the back stairs) leads round to the right of the sky-light under a covered way, to a small room over the common dressing-room in the two pair of stairs. The section of the window on the left, lights the room over the best bed-chamber.

Description of the PLANS.

A 1st hall story of the stair-cases.

B The first step ascending the best stair case.

The figures 1, 2, 3, &c. shew the number of steps to the one pair of stairs.

C Door leading to dining parlour.

D Door leading to the hall.

E Door leading to back stairs.

F The first step ascending the back stairs.

The figures 1, 2, 3, &c. shew the number of steps to the one pair of back stairs.

G Door leading to dining parlour.

H Door leading to the flat or yard.

B 2d one pair of stairs story of the stair-cases.

C The landing of the best stair-case.

D Door leading to lady's dressing-room.

E Door leading to drawing-room.

FFF Niches.

G Open part of stair-case.

H Landing on back stairs.

I The first step ascending back stairs.

The figures 1, 2, 3, &c. shew the number of steps to the bed-chamber back story.

K Door leading to ladies dressing-room.

L Window giving light to back stair-case.

C 3d bed chamber story of the stair-cases.

D The landing of best stair-case.

E Door leading to the best bed-chamber.

F Door leading to common dressing-room, being a small one, the size of the porter's hall.

G Open part of the stair-case.

H Landing on back stairs.

I The first step ascending.

The figures 1, 2, 3, &c. shew the number of steps to the rooms in the roof.

K Door leading to best bed-chamber.

L Window giving light to back stairs.

D 4th, The story in the roof of stair-cases.

E Landing of back stairs.

F Door leading to the room over best bed-chamber.

G Glass door leading round the coved sky-light into the small room over common dressing room.

H The flat leading to ditto.

III These dotted lines shew the extent of the covering of the flat.

J Open part of back stairs.

K Door leading to the small room over common dressing-room.

LL Windows lighting the room over best bed-chamber

M Half the inside of the coved sky-light.

NNN Cornice.

O Half the outside of the coved sky-light.

The dotted line P (on each story) shews the cause of the traverse section of the great stair-case.

The dotted line Q (on each story) shews the course of the longitudinal section of the stair-cases, which will be given in our next Number.

P L A T E LVII.

The elevation and sections of the farm-house and buildings adjoining, on Plate 49.

The upper draft takes its course through the entrance A (see the Plan) then through the yard before the house—in which is seen the room for servants to dine, &c. T.—The covered way

way M—through the mansion, in which, on the basement story, is seen the section of the cellars (under kitchen, &c.) the passage leading to them, the area giving them light—the part under parlours, solid earth.

On the hall story is seen the section of hall C, stair-case D, kitchen I.

On the chamber floor, is seen the section of the room over the hall, leading to the different chambers, and the chamber over kitchen.

From thence we go through the farm-yard—the pond F 2d, where is seen the elevation of the stables, in the center of which is the arched way Z—the hay-loft over ditto—the covered ways M, where is seen the doors of the places for poultry, hogs, &c. D 2d.

We then proceed through the cart-house A 2d, and cow-house B 2d, over which is seen the section of the granaries. We then go into the fields.

The lower draft takes its course through the arched way Z, in which is seen the door leading into the stables, over which is seen the section of the hay-loft.

Then thro' the farm-yard, the pond F 2d, where is seen an elevation of the cart-house A 2, and granary over it, the covered way M, where is seen the door for poultry, &c. D 2d.

Then through the brew-house U, and oven V.

P L A T E LVIII.

The Plan and Elevation of a Design for STABLES.

This design is formed to avoid the disagreeable circumstances usually attending stables being built under the eye of the mansion, by having all the business relating thereto performed within its own walls, and to form a pleasing object from the main buildings.

The stables, coach-house, and places for cleaning, harnessing, &c. all comprehended within the design. The carriages to drive through the portico, and to back into the coach-house, the horses, coach, &c. to be cleaned and put-too in the center of the open part of the buildings.

A Portico.

The dotted line B shews the extent and form of the flat over the portico.

C The open part of the building.

The dotted lines shew the manner of the grounds.

DD Stables.

EEE Stalls.

FF Mangers.

The dotted lines GG shew the form of the sky-light to stables.

H Coach-house, over which is a flat of the same form as over portico.

I Pump.

KK Rooms for the utensils belonging to the coachman, groom, &c.

LL Stair-cases.

The plan of the rooms for the coachman and grooms, hay-loft, &c. and section of the whole building, will be given in our next.

P L A T E LIX.

The Plan and Elevation of a Design for a VILLA.

A correspondent, who signs himself J. D. has sent the design of this plan, requesting us to give an elevation adapted to it.

He informs us it is intended for a gentleman's mansion in the country.

He describes the plan in the following manner.

A Vestibule.	E Common parlour.
B Dining room.	F Study.
C Withdrawing room.	G Kitchen.
D Best stair-case.	H Common stair-case.

The servants hall, pantries, cellars, &c. to be on the under ground floor. The brew-house, scullery, &c. to communicate with the kitchen, and with the stables, coach-house, &c. to form a square court behind the house, which will be commanded from the study window.

The best stair-case to be lighted by a cupola or dome, the common one by a sky-light.

The chamber story to contain six rooms, with light closets to each, except that over study, which must be entered at the last half-pace of the stair-case.

The design for the elevation, he recommends as follows.

The hall story fifteen feet high, the chamber floor and atticks to be guided by the elevation.

He dates from Taunton, August 1st, 1775.

P L A T E LX.

The longitudinal Section of the STAIR-CASES on Plate LVI.

1st, Hall story; 2d, One pair of stairs; 3d, Bed-chamber story; 4th, Story in the roof.

On the hall story, we see the side of the great stair-case, ascending to the one pair of stairs; the door that fronts leads into the dining-parlour; the section of the door on the left leads into hall; the section of the door on the right hand leads to back stairs; the door that fronts leads likewise into the dining-parlour; the section of the door on the right leads to the yard—part of the back stairs are seen.

On the one pair of stairs we see the landing; the front door leads to the ladies dressing-room; the section of the door on the left hand leads to the drawing-room. On the back stairs is seen the landing; the front door leads likewise to ladies dressing room; the section of the window to the right looking into the yard—part of the back stairs are seen.

On the bed chamber story we see the landing; the front door leads to the best bed-chamber; the section of the door on the left leads to common dressing-room.

On the back stair is seen the landing; the front door leads (likewise) to best bed-chamber, the section of the window to the right looks into the yard.

On the story in the roof is seen the landing on back stairs; front door leads to servants room; the section of the door to the left leads round the coved sky-light through the other section of the door to room over common dressing room; the two front windows lighting servants room—we likewise see the coved sky-light.

P L A T E LXI.

The Section of the STABLES, and Plan of the FLOOR over the STABLES, on Plate LVIII.

A A Stair-cases.

B B The landings.

C C Rooms for coachmen, grooms, &c.

D D Hay lofts.

E E Trap doors to take up the hay from below.

F F Step-ladders descending to the galleries G G, which extend round the stables for the conveniency of putting the hay down into the racks below.

H H Semi-circular openings to let the hay through into the racks below.

I I Open part of the stables.

K Flat over portico.

L Flat over coach house.

Q

Description

Description of the SECTION.

Having entered the portico A, (see Plate LVIII.) into the open part of the building C, we see before us the entrance into the coach-house; the doors on each side, that on the left leading to stair-case L; that on the right to the rooms for utensils K K. Through the sections of the door to right and left we enter the stables, where is seen the stalls, mangers, and racks.—Having ascended the stair-cases, we enter the coachmen and grooms room C; to the right and left is seen the hay-lofts D; the door on the left hand one leads to the landing B; in the right hand one we see the window looking towards the flat L over coach-house; likewise the sections of the trap-doors E, for receiving the hay.

On each side is seen the section of doors communicating to gallery G; by the means of the step-ladders FF, which are likewise seen. Having gone round the galleries to the furthestmost part of building, is seen the section of the semi-circular holes for letting down the hay HHH.—At the top of the domes is seen the section of the sky-lights.

P L A T E LXII.

The Plan and Elevation of a Design for a Gothic Mansion to be erected on an Eminence that commands an extensive Prospect.

AA Steps ascending up on the	H Closet.
BB Terras.	I Stair-case.
C Porch.	K Kitchen.
D Hall.	L Copper.
E Common parlour.	MM Dressers.
F Closet.	N Pantry.
G Best parlour.	OO Shelves.

A view of this Elevation taken at the point P, with the plan of bed-chamber story in the next Number.

P L A T E LXIII.

Three Designs for LAMP IRONS.

P L A T E LXIV.

The Plan and Elevation of a Design for a MARKET HOUSE.

- AA The piazza, or market-place.
 - BB These dotted lines shew the form of the grounds.
 - C The porters or officers (that superintends the market) room.
 - D The grand stairs ascending to the right and left, up to the assembly-room, over the piazza.
 - E The back stairs.
 - F Chimney.
 - G This dotted line shews the course of the longitudinal section.
 - H This dotted line shews the course of the traverse section of the building, which will be given in the succeeding Numbers.
- The longitudinal section, with the plan of the assembly-room, in the next Number.

P L A T E LXV.

The Plan of the BED-CHAMBER STORY and the ELEVATION, taken at the Point P, on Plate LXII.

- A Stair-case (which continues up to the leads) upon which is admittance to three rooms for servants, there being one over each bed-chamber.
- B Saloon.
- C Sky-light.
- D Common bed-room.
- E Best bed-room.
- F Nursery.
- G General dressing-room.
- H Private dressing-room.
- III Beds.
- KKK Closets.

P L A T E LXVI.

The Plan and Elevation of a Design for a GOTHIC SEAT of RETIREMENT.

- A Inside of the building.
- BB Seats.

P L A T E LXVII.

A Design for an IRON GATE.
R

P L A T E LXVIII.

The Plan of the principal Story, &c. with the longitudinal Section of the MARKET HOUSE on Plate LXIV.

- | | |
|--|--|
| A Assembly-room | III Balcony continuing all round the building |
| B Refreshing-room | K This dotted line shews the course of the longitudinal Section |
| C Room for the conveniency of getting the refreshments ready | L This dotted line shews the course of the traverse section, which with the side front and plan of attic story in the next Number. |
| D Card-room | |
| EE Grand stairs | |
| F Landing | |
| G Back-stairs | |
| H Water-closet | |

Description of the SECTION.

In the piazza, or market-place, is seen the front door, which leads to the grand stair-case; that door on the right leads to porter's room; that on the left to the back stair-case.

In the upper story, is seen the assembly-room (the height of which extends to the roof) in front is the chimney-piece opposite to the windows; on each side are the doors leading from the grand stair-case.—On the right side is seen the refreshing-room.—On the left side is seen the card-room.

In the attic story is seen the gallery, extending round the assembly-room. On the right hand is seen the room for the people who have the care of the house. On the left hand is seen the music-room.

P L A T E LXIX.

The Plan and Elevation of a Design for a SHOP FRONT.

- A The plan of the shop front
- B The door leading into ditto
- C The shop
- D The door leading to passage belonging to the house
- E The passage.

P L A T E LXX.

Two Designs for CHAIRS.

Fig. 1——for a hall.

Fig. 2——for a dressing-room.

S

P L A T E

P L A T E LXXI.

The Plan and Elevation of a Design for an OBELISK.

A The Plan

BBBB Niches, for the conveniency of people resting themselves after walking.

P L A T E LXXII.

The Plan of the Attic Story, with the traverse Section, and the profile Elevation of the MARKET HOUSE on PLATE LXIV.

- A The open part of the assembly-room.
- BBB Gallery.
- C Music-room.
- D Room for the person who has the care of the house, &c.
- E The bed room.
- F Open part of the great stair-case.
- G Water closet.
- H Back stairs.
- I This dotted line shews the course of the longitudinal section.
- K This dotted line shews the course of the traverse section.

Description of the SECTION.

In the piazza to the right is seen the section of the door leading to the grand stair-case, which is seen; the side of which is the door leading to the back stairs.—On the upper story, in the assembly-room in the front, is the colonnade leading to the card-room; the front door on the grand stair-case leading to the back stairs.—On the attic story is seen the music-room, decorated with curtains, &c. which let down on occasion; the opposite end to be painted, to represent the same design; as it is partitioned off for the conveniency of a room for the people who have the care of the house.

P L A T E LXXIII.

The Plan and Elevation of a Design for a rusticated small HUNTING VILLA.

- A The vestibule, or porch.
- BB Anti-rooms.
- C Dining-parlour.
- D Parlour.
- E Dressing-room.
- F Stair-case.
- G Door leading to the offices.
- H The offices.

T

The

The bed-room, &c. on the upper story—the plan of which, with the back front, will be given in some future Number.

P L A T E LXXIV.

A Design for a FIRE VASE to warm Halls or Stair-cases.

P L A T E LXXV.

A Design for a S T O V E.

P L A T E LXXVI.

The Plan and Elevation of a Design for a public Library.

- A The Hall.
- B B B Small Libraries
- C The grand Library
- D The Refreshing Room
- E Private Room
- F Passage
- G Room for the people who have the care of the Library
- H H Water Closets
- I I I I Book-cafes
- K Sky-light
- L L L L Chimneys. These four in grand Library are designed to give heat both ways
- M This dotted line shews the course of the section, which will be given in a succeeding number.

P L A T E LXXVII.

A Design for finishing the Pier of a Lady's Dressing Room.

P L A T E LXXVIII.

A Design for a Tomb.

P L A T E LXXIX.

Three Designs for Shop Cornices.

P L A T E LXXX.

The Ground Plan and Elevation of a Villa, designed at the Request of John Fennick, Esq; of Bywell, near Newcastle upon Tyne.

A A A A Flights of steps ascending to the principal story.	ZZZZ Necessaries
B Common Hall	A ₂ Billiard-room
C Stair-case	B ₂ Ditto Table
D Steward's-room	C ₂ Smoking-room
E His Office	D ₂ Dressing-room belonging to the Bath
F Stone Closet	E ₂ Bath
G Bed-room.	F ₂ Footing round the Bath
H Housekeeper's-room	G ₂ Steps down into the water
I I Store-rooms	H ₂ H ₂ Niches for seats to repose on
J Bed-room	I ₂ I ₂ Piazzas
K K Stoves	K ₂ Butler's-room
L Kitchen	L ₂ L ₂ Plate Closets
M M M Stoves	M ₂ M ₂ Cellars
N Scullery	N ₂ Wine Cellar
O Hot Larder	O ₂ Dairy
P Cold Larder	P ₂ Alcove towards Garden
Q Pantry	Q ₂ Q ₂ Chimnies
R Servant's Hall	R ₂ R ₂ These dotted lines shew the manner of the Groinds.
S Room to clean Plate in	S ₂ S ₂ This dotted line shews the course of the longitudinal Section, which, with the plan of the principal story, will be given in the next number.
T T T Passages	
U U Private Stair-cases for servants	
V Private Stair-case for servants to go to the chapel	
W Confectioner's-room	
X X Stoves	
Y Closets for jellies, &c.	

P L A T E LXXXI.

The Plan and Elevation of a Sugar House.

- A Stove for baking Sugar
- B B B Pans for boiling Sugar
- C Pan Chimney
- D Clarifying Cistern
- E E E Coolers
- F Stairs ascending to the Warehouses.

P L A T E LXXXII.

A Design for a Looking Glass.

P L A T E LXXXIII.

The longitudinal Section and Plan of the principal Story of the Design
for a Villa on Plate LXXX.

A A Flights of Steps ascending to the principal floor.	X Collonade
B B Platforms	Y Y Salcons leading to the picture gallery
C C Small halls leading to the grand hall or saloon	Z Picture-gallery
D Saloon	A ₂ Chapel.
E Porter's-room	B ₂ Pulpit
F Room for fire-arms, &c.	C ₂ Reading-desk
G Stair-case	D ₂ Communion table
H H Private stair-case for servants	E ₂ Organ
I Breakfasting-parlour	D ₂ Gentlemens-seats
K Alcove for china	E ₂ Servants-seats
L Dining-Parlour	F ₂ Steps ascending to the pulpit
M Alcove for side-board	G ₂ Collonade leading to the gentleman's side of the chapel
N Drawing-room	H ₂ Collonade leading to the servant's side of ditto
O Waiting-room	I ₂ Servants stair-case leading to ditto
P Gentleman's dressing-room	K ₂ K ₂ Water-closets.
Q Collonade leading to the library	L ₂ L ₂ Chimnies
R Semicircular passage leading to the music-room	M ₂ M ₂ These dotted lines shew the form of the sky-light.
S Music or dancing-room	N ₂ N ₂ This dotted line shews the course of the longitudinal section.
T Orchestra	
U Organ	
V Library	
W W Book-cases	

Description of the SECTION.

See the Plan of the Ground Story.

We shall begin at the Alcove towards the garden P₂—thence (following the dotted line S₂) we see the dairy O₂—thence the cellars M₂—thence the butler's-room K₂—thence up the steps and thro' the passage T—across the hall B—thence by the stair-case C—then down the steps, where is seen the private stair-case for servants to go to chapel V—thence
Y the

the confectioner's room W—thence the smoaking room C2—thence the billiard room A2—thence the dressing-room D2—thence the bath E2—Having thus gone through the whole of the building on the ground plan, we ascend to the principal floor, and begin again to take our course at the library V (see the plan of the principal story) thence is seen the music or dancing-room S—thence the circular passage R—thence the gentleman's dressing-room P—thence the other side of the circular passage R—thence drawing room N—thence the ground saloon D—thence the stair-case G—thence thro' the small saloons Y—thence is seen the picture gallery Z—thence is seen the chapel A2—on the two pair of stairs, or bed-chamber-floor is seen over the drawing-room, a small bed-chamber and a dressing-room—the saloon extends to the two pair of stairs floor, over which is seen the outside of the two circular private stair-cases for servants H, with doors leading over the leads to other rooms for servants—the stair-case G extends to the top of the house—over the small saloons Y is seen a small dressing room—In the next number will be given the plan of the two pair of stairs floor and section of the whole building, taking its course thro' the hall C—thence thro' the saloon D, and the other hall C.

P L A T E LXXXIV.

The Section of the publick Library on Plate LXXVI.

Description of the SECTION.

We begin at the refreshing room D—thence into one of the small libraries for the different languages B—thence into the grand library C—thence into another small library B—thence thro' the passage F.

P L A T E LXXXV.

A Design for a Chimney Piece.

P L A T E LXXXVI.

The traverse Section of the Villa on Plate LXXX. with the Plan of the two pair of Stairs Bed-chamber Floor.

A Stair-cafe	K Small dressing room
B Gentleman's bed-room	LL Private stair-cafes for servants
C Lady's dressing-room	M The open part of the saloon
D Nursery, or room for children	NN Beds
E Waiting-maid's room	OO Sky-lights
F Governesses room	PP Chimnies
G Small dressing-room or passage	The dotted line Q shews the course
HH Visitors-rooms	of the longitudinal section.
I Ditto dressing-room	

Description of the SECTION.

See the Ground Plan.

We begin at the entrance of the common hall B—in the center of which is seen the passage T—leading to the cellars, &c.—the first door is the way to the private stair-cafe for servants U—the second door opens into the cold larder P—the third door opens into the pantry Q—in the front and rear of the building is seen the steps ascending to the principal story.

See the plan of principal story. We begin at the platform B—thence into the small hall C—thro' the saloon D—thence into the other hall C.

See the plan of the bed-chamber floor.—Over the small hall C—in front of building) is seen the lady's dressing-room G—the saloon extends to the top of the two pair of stairs story—over the other small hall C—is the dressing-room for visitors I.—On the three pair of stairs floor, or story in the roof, is seen, over the lady's dressing-room, a bed-room for servants lighted by a sky-light; adjoining to it is seen the outside of the entrance to it; we then go round the outside of sky-light of the saloon, where is seen the outside of private stair-cafe for servants, which gives admittance into another bed-room for servants—lighted by a sky-light.

P L A T E LXXXVII.

The Back Front and Plan of the Bed-chamber Floor of the Design for a small rusticated HUNTING VILLA on Plate LXXIII.

A Stair-cafe	F Wardrobe
B Saloon	G Water-closet
C Best bed-room	HH Beds
D Alcove for bed	II Chimnies
E Bed-room	Z

P L A T E

P L A T E LXXXVIII.

The Plans and Elevation of a Design for a FARM HOUSE, or Rural Mansion.

F I G. I.

The Ground Plan.

- | | |
|--------------|-------------------------------------|
| A Portico | G Kitchen |
| B Porch | H Copper |
| C Hall | II Chimnies |
| D Parlour | KK Doors leading to garden and yard |
| E Pantry | |
| F Stair-cafe | |

F I G. II.

The Bed-chamber Floor.

- | | |
|------------------------|-----------------------|
| A Stair-cafe | F Bed-chamber for men |
| B Compaſs-room | GGG Beds |
| C Bed-room | HH Chimnies |
| D Dreſſing-room | I The compaſs |
| E Bed-chamber for maid | K The Sky-light |

P L A T E LXXXIX.

A Design for a M O N U M E N T.

P L A T E XC.

The Ground Plan and Elevation of a Design for a COUNTY COURT, or COURT of JUSTICE; dedicated to the worshipful Justices for the County of Middlesex, who have now a new building in lieu of Hicks's Hall.

- | | |
|--|--|
| A Piazza | P House-keeper's parlour |
| CC Bail-docks, or temporary places
of confinement for prisoners | Q Kitchen |
| DD Seats | R Stoves |
| E Common saloon, or porch | S Copper |
| FF Common necessaries | T Passage |
| GG Stair-cafes for the prisoners to
go up into the court | U Pantry |
| H Private door to the house-keep-
er's apartments | V Larder |
| I Private door to grand stair-cafe | W Stair-cafe ascending to rooms
above |
| J Porter's hall | XX Closets |
| K Grand stair-cafe | YY Chimnies |
| L Hall belonging to the house-
keeper's apartments | ZZ These dotted lines shew the
manner of the grounds |
| MM Passages | Az These dotted lines shew the
course of the longitudinal section |
| N Water-closet | Bz These dotted lines shew the
course of the traverse section |
| O Stair-cafe leading to cellars un-
derneath the building | The longitudinal section will be
given in the succeeding number. |

P L A T E XCI.

The Plan of the principal story, with the West Front of a Design for a COURT of JUSTICE, on the preceding Plate.

- | | |
|--|--|
| A Grand stair-cafe | L The bar for arraigning the pri-
soners from Clerkenwell |
| B The landing | M The bar for arraigning the pri-
soners from Newgate |
| C The court of justice | NN Avenues leading to the above
places |
| D Chairman's or president's seat | OO Stair-cafes for the prisoners to
come from below |
| EE Justices seats | P The room for the grand jury of
Middlesex |
| FF Seats for counsellors and clerks | Q The foreman's seat |
| G Their table | R Their table |
| H Seats for the Jury | |
| I Seats for the witnesses | |
| JJ Seats for the public | |
| K The bar for arraigning prisoners
for assaults | |
- A a
- S The

- | | |
|--|---|
| S The room for the witnesses attending on the grand jury | Y Stair-case belonging to house-keeper's apartments |
| T The record room | Z Chimnies |
| UU Shelves for the records | A ₂ These dotted lines shew the course of the longitudinal section |
| V These dotted lines shew the manner of the grounds | A ₂ These dotted lines shew the course of the traverse section. |
| W Saloon, or waiting-room | |
| X Dining-room | |

P L A T E XCII.

- A Design for a CIELING for a DRESSING-ROOM P on Plate LXXXIII.
AA The cornice.

P L A T E XCIII.

- A Design for a STOVE to fill up the opening of a CHIMNEY.

P L A T E XCIV.

The longitudinal Section of the Design for a COUNTY COURT on
Plate XC.

Description of the Section (see the Ground Plan)

We ascend up the steps into piazza A—where we see the bail-dock C—between which is the door leading to the office for the clerks of the inditements B. Note, in the description of the ground plan this article B, by the mistake of the printer, was left out.—We then enter the common saloon or porch E—the first door that we come to leads to the private stair-case for the prisoners G—the next door leads to the stair-case ascending to the rooms above W—the next door is a blank one—the next door leads to the common necessities F—we then pass through the private door leading to the house-keeper's apartments H—then through the Passage M, and then into the other passage M, where is seen the door which leads into the kitchen Q—from thence we see the house-keeper's room P.

See the Plan of principal Story on Plate XCI.

Having ascended to the principal floor, we see the dining-room X—then is seen the court of justice C—the first door gives admittance from the stair-case for felons from below O, against which is seen the profile of the seats for the publick J—the next door gives admittance from the room for witnesses attending on the grand jury S, against which is seen the fence which incloses the seats for the publick J—under the center niche is seen the fence which incloses the seats for the jury H—the other door gives admittance from the room for the grand jury P, against which is seen the fence which incloses the seats for the publick G—against the abovementioned fences are seen the bars for the prisoners—we see the profile of seats for counsellors, clerks, &c. F, and their table G—we next see the profile of the president's seat D, from whence is seen the front of the seats for the galleries E.

On the attic story, over the dining-room X, is a bed-room, &c. for house-keeper.—The court extends to the top of the roof, which is lighted by a sky-light.—In the center of the court is seen a gallery for the public. In the next Number will be given the traverse section of this design.

P L A T E XCV.

The Plan and Elevation of a Design for a Protestant Dissenters MEETING-HOUSE.

A Portico	II Stairs ascending to the gallery above
B The inside of chapel	KK Room for the minister
CC Isles	L Hall or passage leading to the apartments of the person who has the care of the meeting-house
DD Pews	MM The apartments for the person who looks after the meeting-house.
EE Seats	
F Clerk's desk	
G Pulpit	
H Stairs ascending to the pulpit	

N. B. The longitudinal section, with the plan of the gallery, &c. of the design, in the next Number.

P L A T E XCVI.

The Plan and Elevation of a Design for a GARDEN SEAT.

AA Porticos	EE Niches
BB Collonades	F Window
C The tea-room, &c.	GG These dotted lines shew the form of the cove of the cieling.
D Chimney	

P L A T E XCVII.

A Design for a LAMP.

P L A T E XCVIII.

The traverse Section of the Design for a COUNTY COURT on Plate XC.
Description of the Section (see the Ground Plan.)

To the right is seen the passage T—the door in which leads to the kitchen O—from whence (continuing our course to the left) we see the pantry U—from whence is seen the common necessary F, in which we see the profiles of the seats—from whence we see the porch C—the door in which leads to the house-keeper's apartments H—from thence we see the other common necessary, then the grand stair-case K—which extends to the attic floor.

See the Plan of the principal Story on Plate XCI.

To the right is seen the witnesses room attending on the grand jury S—from thence (continuing our course to the left) we see the court of justice C—on the right side of which is seen the profile of the seats for the jury H—on the left side is seen the profile of the seats for the witnesses I—between which seats are seen the bars for the prisoners—from whence we see the grand stair-case, on the landing of which we see the door which leads to the record-room T.

On the attic story, to the right, is seen a bed-room, &c.—from whence (continuing our course to the left) is seen the profile of the great gallery for the public—from whence we see on each side of the circular cove other small galleries for the public—from whence is seen the profile of the other large gallery—from whence is seen another bed-room, &c. the court extends to the top of the roof, which is lighted by a sky-light.

P L A T E XCIX.

The longitudinal section with the plan of the Gallery Floor of the Design for a Protestant Dissenters MEETING-HOUSE on Plate XCV.

A The open part of the chapel	EE Avenues leading to the pews
BB Stair-cases	FF Lobbies or rooms for the com-
CC Pews	munication to the different gal-
DD Seats	leries.

C c

Description

Description of the Section (see the Ground Plan.)

We ascend up into the collonade A—from whence we enter the chapel, where is seen the fronts and profiles of the pews—to the left of the chapel we see the profile of the clerk's desk T—then the pulpit G—round which is seen the stairs H, which ascend up to the pulpit—from whence we see the hall L, the door in which leads to the rooms M.

See the Plan of the Gallery Floor.

To the right and left of the building we see the profiles of the galleries, where is seen the front of the pews and the profiles of the seats behind them—the two doors, that on the right gives admittance from the stair-case B—and that on the left from the lobby F—we likewise see the front of the gallery.

P L A T E C.

A Design for a FRONTISPIECE.

P L A T E CI.

Three Designs for ENTABLATURES.

Fig. 1. For a drawing-room.

Fig. 2. For a parlour.

Fig. 3. For a dressing-room.

P L A T E CII.

The Plan and Elevation of a Design for a Bridge.

- | | |
|--|--|
| A Half the plan of the foundation
of the bridge | G Coach-way |
| B The pier | H H Foot-ways |
| C C Sterlings | I The profile of the bed of the river |
| D D The river | K The water-line |
| E The bank of the river | L L The profiles of the bank of the
river |
| F Half the plan of the upper part,
or coach-way of the bridge | M M Niches. |

P L A T E CIII.

The Plan and Elevation of a Design for a Country Public-House.

F I G. I.

The Ground Plan.

- | | |
|-----------------------|---------------|
| A Kitchen or tap-room | E Stair-case |
| B Bar | F Parlour |
| C Pantry | G G Chiunnies |
| D Parlour | |

F I G. II.

The Plan of the Bed-chamber Floor.

- | | |
|---------------------|---------------------|
| A The master's Room | E Stair-case |
| B Childrens room | F Chimney |
| C Maids room | G G Beds |
| D Mens room | H H Small passages. |

P L A T E C I V .

The Plan and Elevation of a Design for a Gothic Pulpit.

- | | |
|-----------------------------------|-----------------------------------|
| A Half the plan of the pulpit | D The feat, which is designed to |
| B Part of the steps of the pulpit | hang to the door |
| C The door | E Half the pillar, which supports |
| | the pulpit. |

P L A T E C V .

- A Design for a Table-frame, to be fixed to a Pier in a Dressing-Room.

P L A T E C VI.

The Section of the Side-board side of the Dining Parlour L on Plate LXXXIII.

P L A T E C VII.

The traverse Section of the Sugar-house on Plate LXXXI, with the Plan of the Warehouse-floor.

A Warehouse
B B Stoves
C C Vent pan chimney
D Stairs ascending to the floors above.

Description of the Section.

See the Ground Plan.

To the left is seen the profile of the stove for the sugar, in which is seen the racks for sugar

On the warehouse-floor (see the plan) to the left we see the stove continued ; to the right is seen the profile of the bulk-head, which extends over the place where the pans for sugar are ; all the other floors are for the sugar.

P L A T E C VIII.

Having seen it remarked in some of the public prints, that the present market-bell in Smithfield is rather too mean a design for the most considerable market-place in the world, and that something on a more extensive plan might be erected, not only to embellish the market with an elegant object, but also to commemorate the actions of those glorious martyrs who there yielded up their blood as a testimony of their faith, and laid a basis for the present happy established religion : and that the design might

E e

also

also serve as a monument or mausoleum to hallow the spot where their ashes
was laid, we have given the following

Design for a Market-cross.

A Half the plan

B The watch-box.

P L A T E CIX.

A Design for an ornamented Pannel.

P L A T E CX.

The Plan and Elevation of a Design for a CHURCH.

(The Elevation is the View taken at the West End.)

- | | |
|---------------------------------------|-------------------------------------|
| AA Steps ascending to | QQ Seats for the common people |
| BB Porches | R The sacristy, or place where the |
| C Stairs ascending to the bellfrey | utensils, the ornaments of the |
| D Stairs ascending to the organ loft, | church, ministers vestments, &c. |
| which is over the door E | are kept |
| E Grand door, or principal en- | S The vestry-room |
| trance | T Room for the reception of the |
| F The body of the church | ministers, &c. |
| GG The arms or sides of the church | UU Chimnies |
| HH Steps ascending to the altar | WW Chapels over the burying- |
| I The railing round the altar | places of honourable families |
| J The area before the altar | The dotted lines shew the manner |
| K The altar | of the grounds |
| LL Seats for the ministers | An elevation of the view taken from |
| M The reading desk | east to west, the sections taken |
| N Stairs ascending to the pulpit | from east to west, and north and |
| O The font | south, of this church in future |
| PP Seats round the church for the | numbers. |
| gentry | The side view in our next. |

P L A T E CXI.

A Design for a Term to support a SUN-DIAL.

The heads on the square block under the dial plate are to represent the four elements—Round the body of the term are four square blocks, each containing three compartments, in which are to be the twelve signs of the zodiac—Upon each block is to be a subject suiting a country situation, such as a dog, a hare, a stag, and a fox.—The heads upon the lower square block are to represent the four seasons, the compartment underneath is to be decorated with subjects appertaining to each Season.

P L A T E CXII.

A Design for a GRATE.

F C

P L A T E CXIII.

The Elevation of the North Front (taken from East to West) of the Church on Plate CX.

The longitudinal Section of this Church in our next.

P L A T E CXIV.

The Plan and Elevation of a Design for a PRINTING HOUSE.

F I G. I.

GROUND PLAN.

- | | |
|--|------------------------------------|
| A Hall | |
| B Reading-room | G Warehouse for the printed Books. |
| C Library | previous to their being delivered |
| D Office | H Stair-case |
| E Private Office | II Chimnies. |
| F Warehouse for Paper before its
being printed. | |

F I G. II.

- | | |
|------------------|------------------------------|
| A Stair-case | E Press-room |
| B Landing | F Room for wetting the paper |
| C Composing-room | GG Chimnies. |
| D Rack-room | |

P L A T E CXV.

Two Designs for LOCK-FURNITURE.

P L A T E CXVI.

The longitudinal Section (taken from East to West) of the Church on Plate CX.

Description of the Section.

See the Plan.

We ascend up the west steps A A—go through the porch B, and grand door E—and descend one step into the body of the church F.—Under the three windows fronting us, we see the doors which lead to the chapels over the burying-places of honourable families, W W.—On each side of said doors, is the elevated seats for the gentry, P P.—We now look towards the south arm, or side of the church G, where in front is the door leading to the south porch B.—Against the left cluster of columns is seen the front O.—We now ascend the three steps leading to the altar H H, where is seen the railing round it, I ; at back of which is the door leading to the vestry room S.—Next we see the profile of the altar K—at back of the altar, is seen the sacristy R, to the left of which is seen the profile of its window.—Returning to the west porch, we either ascend the belfrey stairs C, or organ-stairs D, which bring us into the organ-loft, we enter the little door, at the side of the window, over porch ; to the right is seen the profile of the window looking west ; to the left is the profile of the large arch (size and form of south large window) under which is to be placed the organ : over the altar is seen the profile of east window. Returning again to the organ-loft, we leave it, and ascend up the rest of the belfrey-stairs, and come through the little door into the clock, or ringing room ; to the right is seen the profile of circular opening for the west clock ; in front is seen the back of south clock ; to the left is seen the profile of a little door leading into the roof, over which door is seen likewise, the profile of a window to give light to the roof, we see the upright part of it, or front : and over each window below, (between the rafters) is seen little circular openings to give light to it.—Over the south window, is seen the cross timbers and side form of roof. To the left, is seen the profile of two small windows over the great east window ;—returning to the clock-room we see over the belfrey, to the right, the profile of west window ; and to the left, the profile of east window. Over the belfrey is seen the turret.

The traverse Section in the next number.

The Gothic architecture has, for these few years past, fallen greatly under the censure of the immoderate admirers of Grecian architecture, yet if we candidly consider we shall find both styles have their separate beau-

H h

ties

ties and use. The Grecian taste certainly best suits those public buildings ; such as palaces, courts of justice, exchanges, hospitals, music-rooms, banqueting-rooms, mansions, &c. but for religious structures, Gothic, undoubtedly, ought to be preferred : the difference is easily to be decided : by spending a few hours in St. Paul's and St. Peter's, Westminster, we may easily and seriously tell which has the greatest effect on the mind ; which pile of building conveys the more devout ideas ; which fills the senses with the greatest attention of the heaven above us ; which leads us more to contemplate on the life to come ?—If I may take the liberty to judge, it is St. Peter's ; St. Paul's never can impart those sensations ; it has the contrary effect. We behold that wondrous object with a familiar eye : we consider that as raised to pass the hours in business, pleasure, and delight ; no pious thoughts possess the mind, as while we are gazing on the vaulted roof of St. Peter. Therefore condemn not Gothic entirely, but as occasion serves and the subject requires, give preference to it. This little digression is meant to take those partial impressions from the minds of the students which they may likely have imbibed, that Gothic architecture is a depraved taste, and ought never, on any account, to be introduced ; and to remind them and others, that Gothic architecture has been ages back the taste of Englishmen, and not entirely be led away by Grecian architecture alone, because it is the invention of foreigners.

P L A T E CXVII.

The Hall Plan and Elevation of a Design for a Gentleman's TOWN-HOUSE.

A Steps	H Porter's room
B Hall	I His bed
C Grand stairs	K Water-closet
D Stair-case for servants	L L Niches for fire vases to warm
E Private stairs for gentlemen to go to the bed-chamber floor	hall
F Dining and breakfasting-parlour	M M Chimneys
G Gentlemen's dressing-room, or study	N N Book-cases
	O O Form of the grounds
	P P The area

The plan of all the stories in the ensuing numbers. The basement story in the next.

P L A T E CXVIII.

A Design for a CHANDELIER.

P L A T E CXIX.

The Traverſe Section (taken from North to South) of the Church on the Plate CX.

Deſcription of the Section.

See the Plan.

We aſcend up the north or ſouth ſteps, A A—go thro' the porch B—and deſcend one ſtep into arm or ſide of the church G—having come to the center of the building, we ſee the altar K—on the right ſide of which is ſeen the door leading to the ſacriſty R—round it is ſeen the railing I—and the ſteps aſcending to it H H—to the left is ſeen the pulpit and reading-deſk M—to the right is ſeen the font O—over the north and ſouth doors, we ſee the profiles of the large windows, over which windows we ſee the profiles of two ſmall windows to light the roof.

The front and profile of the roof drawn to a larger ſcale in the next Number.

P L A T E CXX.

A Deſign for a DOOR or FRONTISPIECE.

P L A T E CXXI.

The Baſement Story of the Deſign for a Gentleman's TOWN HOUSE on Plate CXVII.

A A Coal vaults	H His bed
B Vault for ſervants to put their utenſils in	I Houſekeeper's-room
C C Areas	J J Cloſets
D Steps aſcending to the ſtreet	K K Stoves
E E Paſſages	L Stair-caſe for ſervants
F Steward's-room	M M Neceſſaries
G His bed-room	N N Wine vaults, in which are ſeen the binns for the bottles

O Butler's pantry
P Servants hall
Q Dust-hole
R Kitchen
S Oven
T Copper
U U Dressers
V Scullery

W Larder
X Pantry
Y Stair-case leading to stables and laundry
Z Z Beer Cellars, &c.
A2 A2 Chimnies
The dotted lines shew the form of the grounds.

The continuation of the hall plan, from the dining parlour to the stables—the laundry plan over stables—and bed-chamber plan over laundry, in the next Number.

P L A T E CXXII.

The Plan and Elevation of a Design for an Harmonic Pavillion.

- | | |
|--|--|
| A A Steps ascending to the collonades | KK Seats for the fiddles and other instruments |
| B B Collonades | LL Rooms for the musicians |
| C The music-room | MM Rooms for the company |
| D The orchestra | NN Chimneys |
| E Balustrade, that divides the orchestra from the room | O These dotted lines shew the form of the cove in the ceiling |
| F F Seats for the choristers | The profile elevation and sections taken north and south, and east and west, in the proceeding numbers |
| G Area for the baffes | The profile elevation in the next number. |
| H H Their seats | |
| I Harpsichord | |
| J Organ | |

P L A T E CXXIII.

A Design for a CHAIR.

P L A T E CXXIV.

The Front and Profile of the Inside of the Roof on Plate CX.

F I G. I.

The Front or upright Part of the Roof.

F I G. II.

The Profile of the Roof.

- A 1. 2. 3. 4. 5. 6. 7. are the different timbers, which refer to the figures on the upright part of the roof.
- B B The laths or bridging which sustain the lead covering.
- C C The lead covering
- D D The profile of the vaulting
- E E The profile of the side walls
- F F the profile of the turrets
- The circular dotted lines shew in what manner the roof is constructed.
- The perpendicular dotted lines shew where the timbers intersect, as is seen on fig. I.

K k

The

The horizontal dotted lines refer from the profile timbers to the upright part of them on fig, I.

The outside of the great north window of the church in the next Number.

P L A T E CXXV.

The Continuation of the Hall Plan from the Dining Parlour to the Stables—The Laundry Plan over Stables—and the Bed-chamber Plan over Laundry.

F I G. I.

Continuation of the Hall Plan.

- A and F Dining-room and breakfasting parlour
- B and G Gentleman's dressing-room and stud
- C C Flat over the kitchen, &c.
- D Stair-case ascending to the laundry
- E Stables
- F F Stalls
- G Manger
- H Step-ladder to the hay-loft
- I I Coach-house
- J J Are as

F I G. I.

The Laundry Plan.

- A Stair-case ascending to bed-room
- B Laundry
- C Hay-loft
- D Opening to put hay down
- E Step-ladder from the stables
- F Door to take hay in from the carts
- G Chimney.

F I G, III.

Bed Chamber Plan for Men.

- A Stair-case
- B Footmen's room
- C Coachman and Groom's room
- D D Beds
- E Chimney

The plans of the one pair of stairs and two pair, in the next Number.

P L A T E CXXVI.

The great North Window of the Church on Plate CX. The West Door in the next Number.

P L A T E CXXVII.

A Design for a MONUMENT.

P L A T E CXXVIII.

The Profile Elevation of the Design for an HARMONIC PAVILLION on Plate CXXII. The Section taken North and South in the next Number.

P L A T E CXXIX.

The Plans of the one Pair of Stairs and two Pair of Stairs Floors of the design for a Gentleman's TOWN HOUSE on Plate CXVII.

F I G. I.

The One Pair of Stairs Floor.

- | | |
|--|---------------------------|
| A Drawing-room | E Grand stair-case |
| B Saloon | F Landing |
| C Balcony, giving a view of the grand stair-case | G Private stair-case |
| D Withdrawing-room | H Stair-case for servants |
| | I Chimnies |

L I

F I G.

F I G. II.

The Two Pair of Stairs Floor.

A Best bed-room
 B Ditto dressing-room
 C Ditto wardrobe
 D Second bed-room
 E Ditto dressing-room
 F Ditto wardrobe

G The open part of the grand stair-
 case
 H H Gallery
 I Private stair-case
 K Stair-case for servants
 L L Beds
 M M Chimnies

The Plans of the Garret Story and Outside of Roof in the next
 Number.

P L A T E CXXX.

The West Door of the CHURCH on Plate CX.

P L A T E CXXXI.

The Section (taken North and South) of the Design for an HARMONIC PAVILLION.

Description of the Section.

See the Plan.

In Front of the Music-room C—we see the Orchestra D—, on each Side are seen the Collonades B—.

The Section taken East and West in the next Number.

P L A T E CXXXII.

A Design for a STATUARY MARBLE TABLE, inlaid with Japan Paintings.

P L A T E CXXXIII.

The Plans of the Garret Story and Outside of the Roof, of the Design for a Gentleman's TOWN HOUSE on Plate CXVII.

F I G. I.

The Garret Story.

A Stair-case for servants
B B Landing
C Open part of private stair-case
D D Rooms for women servants
E E Closets
F Open part of grand stair-case
G G Chimnies
H H Beds.

The dotted Lines shew the Form of the Sky-lights.

M m

F I G.

F I G. II.

The Outside of Roof.

- A A The Roof
- B Lead flat over grand stair-case
- C Ditto over private and servants ditto
- D Ditto over closets
- E E Ditto over garret windows
- F F Sky-lights
- G G Chimney flues
- H H Gutters
- I I Parapets.

P L A T E CXXXIV.

A Design for a SHOP FRONT.

P L A T E CXXXV.

The Section (taken East and west) of the Design for an HARMONIC PAVILLION.

Description of the Section.

See the Plan.

We ascend to the west collonade B—next enter music-room C—to the left is seen the orchestra D, wherein is the profile of the organ I, and harpsichord !.

To the left of the dome is seen the profile of the false front, to make the side-elevations uniform—This necessary help is so contrived, that neither within the building, nor without, can it any ways be seen, but every part appears regular. This design is to shew the student : that as frequently buildings are finished in an irregular manner, for the convenience of rendering some more favourite part compleat) that it is possible to remedy every disagreeable object in the like manner by a little study, as is here illustrated.

P L A T E CXXXVI.

The Plan and Elevation of a Design for an EGYPTIAN PYRAMIDICAL DAIRY.

A Entrance

B Dairy

C C Recesses for pans of milk, &c.

D D These dotted lines shew the situation of circular windows above

E E These dotted lines shew the form of the grounds

The section, taken east and west, in the next Number.

P L A T E CXXXVII.

The Plan and Elevation of a Design for a SHEEP COTE, to terminate the End of a Canal in a Garden, which generally extends to the Meadows or Pasture Ground.

A Shepherd's hut

B Bed-room

C Bed

D Fire-place

E Yard

F F Hovels for sheep

G G Rough bodies of trees which support the upper part of hovel

H Store-house for provender

I Pond

K K Avenues for the sheep to go in and out

L L Hurdles or railing which divide the garden from the meadows.

The section (taken east and west) in the next Number.

P L A T E CXXXVIII.

The Ground Plan and Elevation of a Design for an Inn.

A Portico	O Dresser
B Hall	P Pantry
C Larder	Q Dresser
D Bar	R Grand stair-case
E Bar-room	S Private ditto
F Public room for company	T T Glass doors leading into the
G G Private rooms for ditto	yard
H Kitchen	U U Chimnies
I Copper	V V Gateways
K Stoves	W W Yard
L L Dressers	X Passage
M Scullery	The plans of the principal and at-
N Sink	tic floors in the next Number.

P L A T E CXXXIX.

The Ground Plan and Elevation of a Design for a Villa, with a small Farm adjoining.

A1 A1 Steps ascending into the	U Stairs ascending to laundry
House	V Coal-hole
B Hall	W Common necessary
C Study, or common Parlour	X Dung court
D Drawing-room	Y Common stable
E Dining-room	ZZ Stalls
F China cup-board	A2 Manger
G Grand stair-case	B2 Saddle house
H Private ditto	C2 Best Stable
I Kitchen	D2 D2 Stalls
J Stoves	E2 Manger
K K Chimnies	F2 Saddle house
L Cup-board for Glasses	G2 Gateway to the court
M Scullery and Brewhouse	H2 H2 Coach-houses
N Pantry	I2 I2 Cow-stalls
O Milk house	J2 J2 Mangers
P Store-room	K2 Hog-sty
Q Stair-case ascending to rooms	L2 Cyder-house
for servants	M2 Barn
R Water-closet	The chamber and attic floors are
S Poultry court	for bed-rooms, &c.
T Place for keeping wood, &c. in	

O o

P L A T E

P L A T E CXL.

The Section (taken East and West) of the design for an EGYPTIAN
PYRAMIDICAL DAIRY, on Plate CXXXVI.

Description of the Section.

See the Plan.

At the west side we see the profile of the door or entrance A—in the front is seen the recesses for the milk, &c. C—to the left is the profile of a recess; above is seen the profile of the circular window D; and on each side is the profile of ditto; above which is the profile of the timbers supporting the upper part of pyramid.

P L A T E CXLI.

The Section (taken East and West) of the Design for a SHEEP COTE,
on Plate CXXXVII.

Description of the Section.

See the Plan.

At the west end is seen the inside of the shepherd's hut A—in the center is the fire-place D—on each is the windows, beyond which is the profiles of the two doors—next is the Yard E—in the center of which is seen the profile of the pond I—behind is the hovel for sheep F—where is seen the door leading to the avenues K—at the east end is seen the inside of the store-house H—where is a window and a profile of a door.

P L A T E CXLII.

A Design for an Iron Gate, or Entrance into a Gentleman's Park.

P L A T E CXLIII.

The Plan and elevation of a Design for a FOOT BRIDGE, over a small River in a Gentleman's Park.

- | | | | |
|-----|--|-----|---------------------------------------|
| A | Half the plan of the foundations | G | Steps ascending to the bridge |
| B | The pier | H | The profile of the bed of the river |
| C C | Stirlings | I | The water line |
| D D | The river | K K | The profiles of the bank of the river |
| E | The bank of the river | | |
| F | Half the plan of the upper part of foot-way of the bridge. | | |

P L A T E CXLIV.

The Plan and Elevation of a Design for a KEEPER'S LODGE.

F I G. I.

The Ground Plan.

- | | | | |
|---|----------|---|-------------|
| A | A Steps | E | Gun room |
| B | Kitchen | F | Pantry |
| C | Scullery | G | Parlour |
| D | Closet | H | Stair-case. |

F I G. II.

The Plan of the Bed-room Floor.

- | | | | |
|---|------------|-----|-------------------------------------|
| A | Stair-case | E E | The top of the parlour |
| B | Landing | F F | The top of the scullery and cellar. |
| C | Bed-room | | |
| D | Closet | | |

P L A T E CXLV.

The Plans of the Chamber, and Attic Floors of the Design for an Inn, of
Plate CXXXIX.

F I G. I.

The Plan of Chamber Floor.

A Grand stair-case	H H Bed-rooms
B Landing	I Beds
C Salloon	J Water-closets
D Grand room for company	K Balcony
E E Withdrawing-rooms	L Passage
F Waiters-room	M M Chimnies.
G Common Stair-case	

F I G II.

The Plan of the Attic Floor.

A Common stair-case	F Water-closet
B B Passage or gallery	G G Chimnies
C C Openings to give light to passages below	The circular dotted lines in gallery, shew the form of the sky-lights, giving light to the same.
D D Bed-room	
E E Beds	

P L A T E CXLVI.

The Plan and Elevation of a Design for a STABLE.

A Saloon, or carriage-way.

B B Stables.

C C Stalls.

D D Saddle houses.

P L A T E CXLVII.

A Design for a CHIMNEY-PIECE.

P L A T E CXLVIII.

The Plan and Elevation of a Design for a TOLL HOUSE.

A Tollman's room.

C His bed-room

D Bed.

E Cellar, &c.

P L A T E CXLIX.

A Design for a CLOCK CASE.

P L A T E

The Plan and Elevation of a Design for a ...

A Saloon, or carriage-way.
B B Stables.
C C Stalls.
D D Single boxes.

P L A T 5

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P L A T E CL.

The Plan and Elevation of a Design for a MAUSOLEUM.

- A Steps ascending to the mausoleum.
 B Landing.
 C Porch.
 D D Mausoleum.
 E E Steps which raise one part of the Congregation above the other, for the better beholding the ceremony
 F Landing, whereon the corps is rested during the burial service.
 G G Stairs descending each way to the catacombs below.
 H H The open part of the stairs, or well-holes.
 I I Semicircular recesses.
 K Steps ascending to the altar.
 L Inclosed space before the altar.
 M The altar.
 N The clergyman's room.
 O The Sexton's room.

The Plan of the Crypta or Catacombs with the section of the whole building, taken north and south, in the next Number.

P L A T E CLI.

The Plan and Elevation of a Design for a ROUND HOUSE, or WATCH HOUSE.

- | | |
|--|-----------------------------|
| A Piazza or Porch. | K Dungeon. |
| B The room for the Watchmen, &c. | L Seat. |
| C The constable of the night's seat | M Necessary. |
| D D Seats for watchmen, &c. | N Room for women prisoners. |
| E Table. | O Place to lay down on. |
| F Room for prisoners of creditable appearance. | P Seat. |
| G The house-keeper's room. | Q Dungeon. |
| H Room for men prisoners. | R Seat. |
| I Place for them to lay down on. | S Necessary. |
| J Seat. | T T Chimnies. |
| | U U Beds. |

R r

P L A T E

P L A T E CLII.

The Plans and Elevation of a Design for a PARSONAGE HOUSE.

F I G. I.

The Ground Floor.

- | | |
|-------------------------------------|-------------|
| A A Steps ascending into the House. | G Passage. |
| B Hall. | H Kitchen. |
| C Best Parlour. | I Copper. |
| D Common parlour. | K Pantry. |
| E Stair-case. | L Chimnies. |
| F Study, | |

F I G II.

The Plan of the Bed Chamber Floor.

- | | |
|--------------------------------|-------------------------------------|
| A Stairs from below. | G G Chimnies. |
| B Landing. | The stair-case is lighted by a sky- |
| C Stairs ascending to garrets. | light. |
| D D Dressing-rooms. | The two garrets are over the two |
| E E Bed-rooms. | dressing-rooms. |
| F F Beds | |

P L A T E CLIII.

A Design for a CANDLESTICK.

P L A T E CLIV.

The principal Plan and Elevation of a design for a COMPANY'S HALL.

- | | |
|---|--|
| A A Steps. | Z Room for garden pots, &c. |
| B Saloon. | A ₂ Piazza. |
| C Beadles-room. | B ₂ Kitchen. |
| D Armory, or servants hall. | C ₂ C ₂ Tables. |
| E Saloon. | D ₂ Oven. |
| F Private stair case, ascending to the rooms above, beneath which you descend to the kitchen, &c. belonging to the beadle. | E ₂ Copper. |
| G Court-yard. | F ₂ Stoves. |
| H Saloon. | G ₂ Scullery. |
| I Grand hall. | H ₂ Copper. |
| J Steps which raise the prime warden's table above the other tables. | I ₂ Hot larder. |
| K Their table. | J ₂ Dressers. |
| L L Livery tables. | K ₂ Confectioner's-room. |
| M M Side-boards. | L ₂ Stoves. |
| N Columnade, or grand side-board. | M ₂ Tables. |
| O Saloon. | N ₂ Private hall leading to kitchen, &c. |
| P Grand stair-case. | O ₂ Buttery or Pantry. |
| Q Saloon. | P ₂ Butler's Pantry. |
| R Gown-room. | Q ₂ Yard. |
| S Private hall. | R ₂ Necessary for men. |
| T Parlour for the prime wardens, or court-room. | T ₂ Yard. |
| U Their table. | U ₂ Necessary for servants. |
| V Stair case for the musicians to go to the music gallery over columnade N, beneath which you descend to the cellars below. | V ₂ Hall belonging to the clerk of the hall's chambers. |
| W Yard or garden. | W ₂ His parlour. |
| X Alcove. | X ₂ Saloon. |
| Y Necessary for women | Y ₂ Clerk's office. |
| | Z ₂ Desk. |
| | A ₃ Stair-case belonging to the clerk's chambers, beneath which you descend to his kitchen and other offices. |
| | B ₃ B ₃ Chimnies. |

P L A T E CLV.

The one Pair of Stairs Plan with the North Flank Elevation of the whole Building of the Design for a COMPANY'S HALL.

- | | |
|---|---|
| A A Grand stair-case. | P Room for the musicians. |
| B Landing. | Q The open or upper part of the hall. |
| C Saloon. | R R The open or upper part of the yards |
| D Card-room. | S The open or upper part of the kitchen. |
| E Coffee-room, or withdrawing-room. | T Stairs leading to the clerk's apartments. |
| F Saloon. | U Landing. |
| G Private stair-case. | V Saloon. |
| H Landing. | W Dressing-room. |
| I Ball room. | XX Bed-rooms. |
| J J Alcoves for the music, &c. | Y Y Beds. |
| K Picture gallery for the portraits of the wardens, &c. | Z The open or upper part of the court yard. |
| L Saloon. | Az Az Chimnies. |
| M Council chamber. | |
| N Stair-case for the musicians. | |
| O Music gallery. | |

The section taken north and south, and section taken east and west, in the next Number.

P L A T E CLVI.

The Plan of the CRYPTA or CATACOMBS, with the Section, (taken North and South) of the whole building, of the Design for a Mausoleum on Plate CL.

- A A The stairs from the chapel above.
 B Open space under the stairs.
 C C The crypta, or vaulted isles to walk in, and to contemplate on the ashes of the dead.
 D D Catacombs.

The dotted lines shew the forms of the Vaultings.

Description of the Section.

See the Plan of the Mausoleum.

Having got in the center of the landing F, we see before us the steps K—which lead to the altar M—on each side are two recesses I—to the right is seen the clergyman's room N—and to the left the sexton's room O.

See the Plan of the Crypta.

In the centre is seen the stairs (to the right and left) which descend below—in the crypta we see the square doors before the catacombs D—to the right and left is seen the profile of catacombs, in which are the coffins.

P L A T E CLVII.

A Design for a LOOKING GLASS.

P L A T E CLVIII.

The Section (taken North and South) of the Design for a COMPANY'S
HALL, on Plate CLIV.

Description of the Section.

See the Plan of the principal Floor.

Being in the centre of the court-yard G—we see, fronting us, the door leading to the grand hall—the door to the left leading into piazza A₂—and the door to the right leading to the stair-case N.—To the right is seen the prime warden's parlour, under which is a cellar T—and to the left the clerk's office, under which is a passage Y₂—beyond which is the kitchen B₂, which continues up the next story, beneath which is a kitchen belonging to the clerk's apartments.

See the One Pair of Stairs Plan.

The windows in court-yard give light to the picture gallery K—the windows above light a passage—to the right is seen the coffee-room or withdrawing-room, above which is a room and a passage for the Beadle's use—to the left is seen the dressing-room belonging to the clerk's apartments, above which is a passage, and over the kitchen a room for servants to ditto.

P L A T E CLIX.

The Section (taken East and West) of the Design for a COMPANY'S HALL.

Description of the Section.

See the Plan of the principal Floor.

We ascend up the west steps A—enter into the saloon B—under which is a cellar belonging to the beadle—thence into the court-yard, the door to the right leads into saloon E—and the door to the left into saloon Q—the windows give light to the warden's parlour—thence into saloon K—in the centre is a window looking into butler's pantry P₂—(under which is a passage) thence we come through the colonade N—into the grand hall I, which extends (in height) through the upper story—in the centre is seen the nich for the side-board M—over the colonade is the musick gallery.

T t

See

See the Plan of the One Pair of Stairs Floor.

The three centre windows in the court-yard give light to the coffee-room E—the other two light the saloons E and F; the windows above light the passage belonging to the beadle's apartments—To the right is seen the ball room I—to the left is seen the picture gallery K, over which is a passage.

P L A T E CLX.

The Plan and Elevation of a Design for a GOTHIC PAVILION.

A A Footing round the building.

B Inside of the ditto.

C Chimney.

The dotted lines shew the form of the vaultings.

P L A T E CLXI.

A Design for a COMMODE, for a LADY'S DRESSING ROOM.

P L A T E CLXII.

A Design for a Gothic ALTAR-PIECE.

P L A T E CLXIII.

A Design for a SHOP FRONT.

P L A T E CLXIV.

A Design for a CIELING.

P L A T E CLXV.

A Design for a HALL LAMP.

P L A T E CLXVI.

The Plan and Elevation of a Design for a MUSICAL PAVILLION,
To the Memory of

H E N R Y P U R C E L L,

He left this life
And is gone to that blessed place
Where only—his own harmony can
Be exceeded.

- AA Steps leading up to the building.
- BB Piazza or arcades for company to walk in.
- CC Avenues to ditto.
- DD Platform or terras.
- EE Flights of steps ascending to the orchestra.

P L A T E CLXVII.

The Plan and Elevation of a Design for a TEMPLE.

- AA Steps ascending to the building.
- BB Platform or terras.
- C The inside of the temple.
- DD Alcoves.

P L A T E CLXVIII.

A Design for a FONT.

P L A T E CLXIX.

A Design for a STOVE GRATE.

P L A T E CLXX.

The Plans and Elevation of a Design for a MUSICAL PAVILLION.

To the Memory of

GEORGE FREDERICK HANDEL.

To thy great name, I dedicate this pile,
Who has so charm'd this wond'ring list'ning isle,
With notes harmonic, which doth rend the sky,
While modern untun'd strains in discords die ;
The chief of all the choirs, thou stand'st confest,
Of lower worlds. In scenes of endless rest,
Handel, thou sure art highly plac'd among
(In awful state) the bright angelic throng,
For oh, no mortal, more deserv'd the skies,
Who has made millions, with uplifted eyes,
Adore their maker !—Tun'd by thee to sing,
The praises of our mighty heav'nly king.

A Half the ground-plan.
B B Steps leading to the
C C Footing round the building.
D D Flights of steps ascending (to
right and left) to the pavillion a-
bove.
E E Arcades for company to walk,
&c.
F F Grand saloon for ditto.
The dotted lines shew the form of
the groinds.
G Half the upper, or pavillion plan.
H H Footing round the building.
I I Flights of steps ascending to the

K K First platform or terras.
L L Flights of steps ascending to the
M M Second platform or terras.
N The pavillion.
O The pedestal for the figure of
Handel.

In the Elevation
Those circular tablets upon the fas-
cia below the second platform,
are designed to contain the ti-
tles of the several subjects which
he has set to music.

The Section of the whole building, north and south, in the next Number.

Y y

P L A T E

P L A T E C L X X I.

The Plan and Elevation of a Design for a GATE-WAY or Entrance into
a Gentleman's Park.

A Gate-way for Carriages.

B B Door-ways for people on foot.

P L A T E C L X X I I.

A Design for a T E R M.

P L A T E CLXXIII.

The Section of the whole Building, when North and South, of a Design for a MUSICAL PAVILLION, to the Memory of GEORGE FREDERICK HANDEL, on Plate CLXX.

Description of the Section.

See the Ground Plan.

On each side is seen the profile of the steps B, which lead to the footing round the building C—we then enter the arcades for the company to walk in E—then into the saloon F. Above the groinds of the arcades is seen a second tier of groinds for the better support of the building above.

See the Pavillion Plan.

To the right and left (above the arcades) we behold the first platform K—we then ascend up the flights of steps L, which bring us on the second platform M—thence we come into the pavillion N—In the center is seen the profile of the figure of Handel and the pedestal O.

P L A T E CLXXIV.

The Plan and Elevation of a Design for a GENTLEMAN'S VILLA.

A Hall	Q Pantry
B Best stair-case	R Dairy
C Best parlour	S Wood and coal-house
D Saloon	T Place to clean knives, &c.
E Dining-parlour	U Avenue between the house and offices
F Passage	V Stair-case to rooms over coach and stable
G Back stair-case	W Yard
H Avenue between the house and the offices	X Stable
I Kitchen	Y Stalls
J Copper	Z Manger
K Stoves	A2 Step ladder to go up to the hay loft
L Scullery	B2 Coach-house
M Wash-house	C2 Horse-pond
N Copper	D2 Chimnies.
O Stair-case to chambers above	
P Avenue between offices and out-buildings	

P L A T E CLXXV.

The Plan of the Bed Chamber Floors and the Garret Floor of the Design
for a VILLA on the preceding Plate.

F I G. I.

The Plan of the Bed Chamber Floor.

- | | |
|------------------------------|-------------------------------|
| A Best stair-case | L Bed-room for footmen |
| B Landing | M Dditto for butler |
| C Best bed-room | N Stair-case |
| D Wardrobe or dressing-room | O Bed-room for coachman, &c. |
| E Saloon dressing-room. | P Hay-loft |
| FF Alcoves | Q Door to take hay up |
| G Bed-room | R Opening to let the hay down |
| H Passage | S Opening from below |
| I Back stair-case | T Step ladder |
| J Stair-case from Wash-house | U Beds |
| K Passage | V Chimnies. |

F I G. II.

The Plan of the Garret Floor.

- | | |
|--|---|
| A Back stair-case | H Lady's maid's room |
| B Passage | I Room for Cook and house maids,
&c. |
| C Passage | J The open or upper part of the best
stair-case |
| D Nursery | The circular dotted line shews the
form of the sky-light |
| E Glass door to go out on the bal-
cony | KK Beds |
| F Balcony | LL Chimnies. |
| GG Bed-rooms for children and
nursery maids | |

P L A T E CLXXVI.

The Plan and Elevation of a Design for a GROTTTO, at the End of a Canal
in a Gentleman's Garden.

- AA The Canal
BB Walk in the grotto
C Alcove
DD Circular recesses
The dotted lines shew the form of the grounds.

P L A T E CLXXVII.

The ground Plan and Elevation of a Design for a COUNTY GAOL, D.

A Steps ascending to the prison	W Stairs ascending to rooms above for ditto
B Footing before ditto	X The ground for the use of ditto
C Jailor's hall	Y Necessary for ditto
DD Ditto rooms	Z Place for rubbish
E Ditto yard	A ₂ Kitchen
FF Yards for men debtors	B ₂ Copper
G Room for ditto	C ₂ Oven
H Stairs ascending to rooms above, belonging to ditto	D ₂ Scullery
I The ground for the exercise of ditto	E ₂ Hot larder
J Necessary for ditto	F ₂ Cold larder
K Place for rubbish	G ₂ Dresser
L Tap-room for men debtors	H ₂ H ₂ Rooms for the person who keeps the kitchen
M The bar	I ₂ Yard for women felons
N Stairs to go to the beer cellar below	J ₂ Room for ditto
O Boxes	K ₂ Stairs ascending to rooms above for ditto
P P Rooms for the person who keeps the tap	L ₂ Necessary for ditto
Q Yard for men felons	M ₂ Yard before the cellar
R Room for ditto	N ₂ N ₂ Avenues between ditto
S Stairs ascending to rooms above for ditto	O ₂ O ₂ Cells
T Necessary for ditto	P ₂ P ₂ Chimnies
UU Yards for women debtors	Q ₂ Circular space for the convenience of serving all the prisoners with meat and drink, without any of the debtors mixing with the felons.
V Room for ditto	

The walls in the small yards, which are shaded lighter than the other walls, are to be carried up breast high, on which are to be raised an iron work to keep the several prisoners asunder; yet, upon occasion, each may converse with the other, without joining together, and so be the means of keeping good order and peace in the gaol; the general method of letting debtors and felons mix promiscuously together, has been oftentimes productive of bad consequences, and is, by the iron partition, remedied.

In the elevation is seen at each angle of the building (above the first story) cages for the men and women debtors to beg for charity in.

A a

The

The one pair of stairs plan and section of the whole building, (taken north and south) in the next Number.

P L A T E CLXXVIII.

The Plan and Elevation of a Design for a CONDUIT, D.

- A A Footing round the Conduit
- B Entrance into ditto
- C Inside of ditto
- D Bason for water for people and cattle.

P L A T E CLXXIX.

A Design for an ORNAMENTED PANNEL.

P L A T E CLXXX.

The one Pair of Stairs Plan, and the Section of the whole Building (taken North and South) of the Design for a COUNTY GOAL on Plate CLXXVII.

A Stair-case for the men debtors
 B Steps ascending to the cages for them to beg in
 C The cage
 D D Passages
 E E Rooms for men debtors
 F F Common sleeping rooms for ditto
 G G Barracks for sleeping on
 H Stair-case for the women debtors
 I Steps ascending to the cages for them to beg in
 J The cage
 K K Passages
 L L Rooms for women debtors
 M Common sleeping room for ditto
 N Barracks for sleeping on
 O Stair-case for men felons
 P Sleeping room for ditto
 Q Q Barracks for sleeping on
 R Stair-case for women felons
 S Sleeping room for ditto
 T T Barracks for sleeping on
 U The chapel
 V The altar

W Reading desk
 X Stairs ascending to the pulpit
 Y The pulpit
 Z Z Folding doors, which, when service is to be performed in the chapel, is to be opened, and the prisoners to be placed in the following manner. The felons to be sent up to the second story, where, from a gallery in the upper part of the chapel, they may hear the service. Then the debtors may go into the chapel after the service is over; the debtors to return to their apartments, and the folding doors being closed, the felons to return to their rooms likewise
 A2 A2 Chimnies
 B2 The upper part of yard
 The three common sleeping rooms and the chapel extend in height to the top of the building, and receive light from sky-lights.

Description of the Section.

(See the Ground Plan.)

In the center is seen the door leading into the cells O2—the doors on each side lead to the men and women felons rooms. To the right is a profile door leading into tap-room for men debtors L—here is seen the bar M—and boxes O—on the side of the building is the ground for the debtors I—and the place for the rubbish K—to the left is a profile door leading into the kitchen Az—here is seen the doors leading into the hot and cold

cold ladders; on the side of the building is the ground for the women debtors X—and the place for the rubbish Z.

(See the One Pair of Stairs Plan)

Over the tap room is seen the sleeping room for men debtors F. which receives light through a circular opening in the floor of the room, above which is to be for a sleeping room likewise; the whole lighted from a sky-light above. Over the kitchen is seen the sleeping room for the women debtors M, which receives light in the same manner as the men debtors room, and the room above that for another sleeping room.

The two pair of stairs plan, and section of the whole building, taken east and west, in the next Number.

P L A T E CLXXXI.

A Design for a MONUMENT, to the Memory of the Earl of CHATHAM.

The figure in the center is the Earl in his last sickness, requesting the figure before him (which is Lord Camden) to save his country; the other figure is Britannia weeping over her dying son.

P L A T E CLXXXII.

Two Designs for D O O R K N O C K E R S.

P L A T E CLXXXIII.

The two Pair of Stairs Plan, and the Section of the whole building (taken East and West) of the Design for a COUNTRY GOAL, on Plate CLXXVII.

- | | | | |
|-----|--------------------------------|-----|---|
| A | Stair-case for men debtors | P P | Barracks for sleeping on |
| B B | Passages | Q | The open or upper part of the chapel |
| C C | Rooms for men debtors | R R | The gallery for felons to hear divine service in |
| D D | Common rooms for ditto | S S | Folding doors which give admittance to the gallery |
| E E | Barracks for sleeping on | T T | Chimneys |
| F | Stair-case for women debtors | U | The upper part of the yard |
| G G | Passages | V V | Circular openings to give light to rooms below |
| H H | Rooms for women debtors | | The circular dotted lines in the three circular sleeping-rooms and the chapel, shew the form of the sky-lights. |
| I | Common sleeping-room for ditto | | |
| J | Barracks for sleeping on | | |
| K | Stair-case for men felons | | |
| L | Sleeping-room for ditto | | |
| M M | Barracks for sleeping on | | |
| N | Stair-case for women felons | | |
| O | Sleeping-room for ditto | | |

Description of the Section.

(See the Ground Plan)

Ascend up the steps A—enter into the jailor's hall C—where on the left of the chimney, is seen a door which leads to the jailor's room D— from thence into the yards, in the center of which is the door leading into the tap-room L—the door to the right leads to the men debtors appartments E—and the one on the left to the men felons rooms R—we next go to the avenue before the cells N 2—and into the center circular avenue, where is seen the doors leading into the cells O 2—to the left is seen the inside of one of the cells.

(See the One Pair of Stairs Plan.)

Over the hall is one of the common sleeping-rooms for men debtors F—in which is seen a door from the passage D—over the cells is the chapel V—in which is seen the large door entering into the chapel.

(See the Two Pair of Stairs Plan.)

Over the one pair of stairs common sleeping-room is seen the two pair of stairs ditto, with a door from passage B— and likewise we see the circular opening for light V—the whole lighted from the sky-light above.

Over the chapel is seen the gallery R—and the large door entering into the gallery, the whole lighted from the sky-light above.

P L A T E. CLXXXIV.

Three Designs for Borders for GRATES.

C c

P L A T E.

P L A T E CLXXXV.

The Plan and Elevation of a Design for a BONE-HOUSE.

Mors ultima linea rerum est.—Emb. HOR.

- | | | | |
|-----|--------------------------------------|-----|------------------------------|
| A | Half of the plan | D D | Tombs |
| B B | Steps ascending up to the Bone-house | E | Entrance into the Bone-house |
| C C | Footing round ditto | F | Inside of ditto |
| | | G G | Buttments |

The student is to observe, that as all churches should be built in the Gothic taste, as being more suitable to such structures than the Grecian taste, so likewise every part appertaining to it must be in the same style, (as this design for a bone-house, and various other designs introduced in the course of this work for religious purposes.) For true it is, nothing can be more absurd than mixing one taste with the other, as is too commonly the case, for instance, the towers of Westminster Abbey, what a medley of Grecian and Gothic architecture is there !

The choir of the same place is *decorated* with a screen of Grecian columns, &c. to the altar, while every other object round is Gothic !—Guildhall is another proof of this unaccountable fancy—all the upper part of the building has been repaired in the Roman style, doubtless with the intent of shewing how far inferior the Gothic part below is to its vain and towering *beauties* above—the choir to Canterbury cathedral is Grecian, and numberless other places in England can produce instances as ridiculous as these.

I think no true considerate admirer of Grecian architecture can with confidence maintain that such *medley work* shews real taste, it can only shew a love of novelty, which will always reflect a disgrace on the intruder of Grecian architecture on Gothic remains.

If any of these venerable piles need repair, or any alterations, let it be designed in the exact manner of the original work, and seek not, by introducing some new whim or fancy, to cast a *mark of scorn* on what indeed should be our pride to imitate and preserve in its original purity and grandeur.

Some architects of late years have invented an extraordinary taste for Gothic buildings, as the seats of justice in Westminster-hall—the arches that compose the same are *purely modern*, and I may say, with the rest of the ornaments, need no other conviction of their deformity and extravagance than to be compared with the old Gothic—thus is one of the noblest rooms in the world rendered odious, when before it was so truly beautiful and magnificent.

I must confess myself a zealous admirer of Gothic architecture—affirming with confidence, nothing can be more in character, and better adapted to a place of worship, than that awful style of building, and that Grecian and Roman architecture should be confined to mansions and other structures of ease and pleasure.

JOHN CARTER.

F I N I S.

A

C O R R E C T L I S T

O F T H E

PRICES allowed by the most eminent SURVEYORS in LONDON to
the several ARTIFICERS concerned in BUILDING.

BY AN EXPERIENCED SURVEYOR.

BRICKLAYERS WORK.

	£.	s.	d.
New place bricks laid dry in wells, per rod	5	19	0
Do. rough and unjointed, in party and internal walls	7	2	0
Do. with neat flush joint	7	18	0
Grey stock brick-work, with a neat flush joint on both sides in garden walls	9	13	0
Half grey stocks, and $\frac{1}{2}$ place bricks do.	8	13	0
Labour and mortar, per Rod	3	0	0
Labour only, find scaffolding	1	10	0
All drains worked with mortar, per foot reduced	0	0	7 $\frac{1}{2}$
N. B. Ovens and coppers are measured as solid work, at	0	0	8
Gauged brick work, per foot	0	1	5
Do. arches	0	1	10
Labour to gauged arches	0	0	10
Tuscan cornice, and all strait Mouldings	0	2	9
Labour to do.	0	1	5
In brick dentil cornices add for the dentil per foot, run	0	0	4

D R A I N S.

Eighteen inch drains, four inch arch, six courses high, and paved at bottom, per foot run	0	3	3
Do. fourteen inches	0	2	3
Do. nine inches	0	1	6

C O P I N G S.

	£.	s.	d.
Foot tile coping, per foot, sup.	0	0	6 $\frac{1}{2}$
Ten inch do.	0	0	4 $\frac{1}{2}$

BRICKNOGGING.

Place bricks, laid flat, per yard	0	1	8
Do. laid on edge	0	1	3
Grey stocks laid flat	0	2	1
Do. laid on edge	0	1	6
Labour to flat bricknogging, per yard	0	0	6
Do. brick on edge nogging	0	0	4

P A V I N G.

Paving with grey stocks laid flat in mortar, per yard	0	1	11
Do. do. laid dry	0	1	8
Do. with Dutch clinkers, sand included	0	4	4
Labour to do.	0	0	9
Do. to dry flat brick paving	0	0	4
Do. with mortar	0	0	6
Twelve inch tile paving in mortar, per foot, sup.	0	0	6
Ten inch do.	0	0	4 $\frac{1}{2}$
N. B. When ovens are paved with oven foot tiles, they must be numbered and charged, per tile	0	0	11

POINTING.

	£.	s.	d.
Tuck and pat new work	—	—	4
Flat joint	—	—	2½

GALLEY TILE SETTING.

Common white, per Flemish foot	—	0	1	6
Blue and White	—	0	1	0
Preparing the chimnies to be charged by the day.	—	—	—	—

TILING.

Plain tiling on fir laths to a 7 inch gauge, per square	—	1	10	0
Do. with Oak laths	—	1	12	0
Do. with double do.	—	1	15	0
Do. labour only	—	0	5	0
New pantiling laid dry	—	1	0	0
Do. bedded and pointed outside with lime and hair	—	1	3	0
Do. bedded and pointed inside only	—	1	5	0
Do. pointed inside and outside	—	1	7	0

DAY PRICES.

Bricklayer, from Lady-Day to Lord-Mayor's Day	—	—	0	3	4
Labourer, per day	—	—	0	2	2
Bricklayer, from Lord-Mayor's Day to Lady-Day	—	—	0	3	0
Labourer	—	—	0	2	0
Bricklayer, per hour	—	—	0	0	4
Labourer, do.	—	—	0	0	2½
Bedding and jointing fash frames, each	—	—	0	1	6

CARPENTERS PRICES.

New wrought oak, per foot cube	—	—	0	3	9
Do. and framed	—	—	0	4	6
Do. framed rebated and beaded	—	—	0	4	10

OAK PLANK.

One Inch rough, per foot, sup.	—	—	0	0	5
Two inch	—	—	0	0	7
Two inches and half	—	—	0	0	9
Three inch	—	—	0	0	11
Three inches and half	—	—	0	1	2
Four inch	—	—	0	1	5
	—	—	0	1	9

FIR.

Old fir, per foot cube	—	—	0	1	4
New rough fir	—	—	0	1	10
New rough fir, labour and nails	—	—	0	2	2

Do. common framing

Do. in king poits or trussed roofs

£.	s.	d.
0	2	4
0	2	6

FIR PLANK.

Inch fir plank, per foot sup.	—	0	0	3
Inch and half do.	—	0	0	3½
Two inch do.	—	0	0	4½
Two inches and half do.	—	0	0	6
Three inch do.	—	0	0	7

NAKED FLOORING.

LABOUR AND NAILS.

Single framed, per square	—	0	7	6
Do. with trimmers	—	0	8	6
Treble framed	—	0	10	0
Framed with pulley joists	—	0	9	6
Bridged only on naked flooring	—	0	3	6
Bridgings and ceiling joists	—	0	5	0
Cieling floors with pulley joists	—	0	5	6

TRUSSING GIRDERS.

Including oak and labour	—	0	1	1
Do. to each Girder	—	0	14	0
Grooves cut, per foot run	—	0	0	6

ROOFING.

Shed roofing rafters 4 x 3 per square	—	1	1	0
Common curb roofing	—	1	7	0
Purline roof with collar beams	—	1	8	6
Do. framed with principals	—	1	11	0
Girt roofing framed, per square	—	2	5	0
Do. Do. framed and trussed, including king poits	—	3	12	0

QUARTER PARTITIONS.

LABOUR AND NAILS.

Common partitions, per square	—	0	6	6
Trussed partitions	—	0	9	6

GUTTERING.

Inch deal bridged gutters, per foot	—	0	0	5
Whole deal do.	—	0	0	6½
Whole deal trough	—	0	0	6

WATER TRUNKS.

Whole deal 4½ pitched, per foot run	—	0	0	9
Do. 5 inch do.	—	0	0	10
Do. 6 inch do.	—	0	1	1

WEATHER-BOARDING.

Yellow rough boards, per foot sup.	0	0	2 $\frac{1}{2}$
Do. planed and cyphered do.	0	0	3
Do. do. do. battens	0	0	3 $\frac{1}{2}$

BOARDING FOR SLATING.

Rough $\frac{3}{4}$ boarding, per square	0	18	0
Do. do. edges shot	0	19	0
Do. inch boarding	1	2	0
Do. do. edges shot	1	3	0

CENTERING.

Common centering to vaults, per square	0	13	0
Groined do.	1	1	0

SLIT DEAL.

Rough, per foot, sup.	0	0	2 $\frac{1}{2}$
Planed one side	0	0	3 $\frac{1}{4}$
Do. two sides	0	0	4
Do. do. and dovetailed in drawers	0	0	7

THREE-QUARTER DEAL.

Rough, per foot, sup.	0	0	3
Planed one side	0	0	3 $\frac{3}{4}$
Do. two sides	0	0	5
Do. do. and dovetailed	0	0	7 $\frac{1}{2}$

INCH DEAL.

Rough, per foot sup.	0	0	3 $\frac{1}{2}$
Planed one side	0	0	4 $\frac{1}{2}$
Do. two sides	0	0	5 $\frac{1}{2}$
Do. do. and dovetailed	0	0	8

WHOLE DEAL.

Rough, per foot sup.	0	0	4 $\frac{1}{2}$
Planed one side	0	0	5 $\frac{1}{2}$
Do. two sides	0	0	6 $\frac{1}{2}$
Do. do. dovetailed	0	0	9

INCH AND HALF DEAL.

Rough	0	0	5 $\frac{1}{2}$
Planed one side	0	0	6 $\frac{1}{2}$
Do. two sides	0	0	8 $\frac{1}{2}$
Do. do. dovetailed	0	0	10

TWO INCH DEAL.

Rough	0	0	7
Planed one side	0	0	8 $\frac{1}{2}$
Do. two sides	0	0	10

TWO AND HALF INCH DEAL.

Rough	0	0	9
Planed one side	0	0	10 $\frac{1}{2}$
Do. two sides	0	1	0
Clean dresser tops	0	1	2

THREE INCH DEAL.

Rough	0	0	10 $\frac{1}{2}$
Planed one side	0	1	1
Do. two sides	0	1	3
Clean dresser tops	0	1	6

SASH FRAMES AND SASHES.

Deal cased sash frames with wood pullies boxed, and inch and half deal sashes double hung with lines and iron weights, per foot sup.	0	0	11
Do. with oak fills	0	1	1
Do. frames with iron pullies and wainscot sashes	0	1	4
Do. double hung and wainscot beads and tongues	0	1	6
Do. with inch and half mahogany sashes astragal and hollow	0	1	10
Do. with two inch wainscot astragal and hollow sashes, brass pullies, &c. complete	0	2	1
Do. with two inch mahogany sashes	0	2	6

BOXING AND HANGING STILES.

Inch deal boxing stiles	0	0	6 $\frac{1}{2}$
Do. framed, beaded, rebated, and splayed	0	0	7 $\frac{1}{2}$
Whole deal do.	0	0	8 $\frac{1}{2}$
Inch and $\frac{1}{2}$ deal do.	0	0	9 $\frac{1}{2}$

DADO.

Inch deal dovetailed	0	0	5
Do. keyed	0	0	6 $\frac{1}{2}$
Do. do. raking	0	0	8
Whole do. dovetailed	0	0	7
Do. raking	0	0	9

WAINSCOTTING.

Inch deal square dwarf wainscoting, per yard	0	2	6
Do. do. raking	0	3	0
Do. wainscoting framed to ceiling	0	2	4
Do. quarter round and raised pannels	0	4	0
Do. do. dwarf	0	4	6
Do. quarter round and flat pannels	0	3	6
Do. ogee and bead with six inch margins	0	4	6
Do. raking	0	5	0
Do. with raised pannels	0	5	0
Do. raking	0	5	9

Inch $\frac{1}{2}$ deal wainscoting, ovolo and flat			
inch deal pannels	0	6	0
Two inch wainscoting ovolo and flat inch	0	6	9
deal pannels	0	7	0
Do. quirk ogee			

PARTITIONS.

Whole deal partitions framed square with			
$\frac{1}{2}$ inch deal pannels, per foot sup.	0	0	6 $\frac{1}{2}$
Inch $\frac{1}{2}$ deal do.	0	0	7
Do. framed, flush and square	0	0	7 $\frac{1}{2}$
Two inch partition framed square	0	0	9
Do. ovolo and flat pannel one side	0	0	10
Do. ovolo and flat pannel two sides	0	1	1
Do. raised pannels one side	0	1	3
Do. raised pannels both sides	0	1	5
Two inch and half deal partitions bead			
flush and square	0	1	2

FLOORS.

Slit deal, per square	1	2	0
Three quarter deal, rough	1	3	0
Do. wrought	1	5	0
Yellow whole deal, rough	1	15	0
Do. do. wrought	1	18	0
White do. do.	1	12	0
Yellow do. straight joint	2	5	0
Do. do. nailed one edge and joints plowed			
and tongued	2	15	0
Do. do. second best and dowelled	3	18	0
Do. do. with battens	4	4	0
Do. do. with clean boards	5	10	0
Do. do. with clean battens	6	10	0
Inch and half deal, rough, per square	1	18	0
Do. wrought	2	6	0
Two inch deal folded floor	2	16	0
Do. plowed and tongued	3	3	0
Inch and $\frac{1}{4}$ clapboard dowelled floor,			
heading joints plowed and tongued	5	0	0
Inch and half do.	5	10	0
Inch and $\frac{1}{4}$ right wainscot do.	6	10	0
Inch and $\frac{1}{2}$ do.	7	17	0

TORUS SKIRTING.

$\frac{3}{4}$ inch deal torus plinth, per foot sup.	0	0	6
Do. raking	0	0	6 $\frac{1}{2}$
Inch deal level do.	0	0	7
Do. raking do.	0	0	8 $\frac{1}{2}$
Whole deal level do.	0	0	8
Do. raking do.	0	0	9 $\frac{1}{2}$

DOORS.

Slit deal rough ledged, per foot sup.	0	0	5 $\frac{1}{2}$
Do. planed	0	0	4 $\frac{1}{2}$
$\frac{1}{2}$ inch deal rough ledged	0	0	4
Do. planed	0	0	5
Inch deal rough ledged	0	0	5

Do. planed	0	0	6
Do. do. rebated and beaded	0	0	6 $\frac{1}{2}$
Whole deal rough ledged	0	0	6
Do. planed and beaded	0	0	7
Do. two pannel square framed	0	0	6 $\frac{1}{2}$
Do. do. bead flush and square	0	0	8
Do. do. bead and flush both sides	0	0	10
Do. four pannel square framed	0	0	8
Do. six pannel do.	0	0	9
Do. four pannel flush and square	0	0	9
Do. six pannel raised one side square back	0	0	11
Inch $\frac{1}{2}$ deal ledged and beaded	0	0	8
Do. two pannel square framed	0	0	7
Do. four pannel	0	0	8
Do. six pannel	0	0	8 $\frac{1}{2}$
Do. do. quarter round and flat pannel			
front and square back	0	0	9
Do. two pannel ovolo and flat front and			
bead and flush back	0	0	9
Inch and half deal two pannel doors bead			
and flush both sides, per foot sup	0	0	10
Do. six pannel ovolo and flat front bead			
and flush back	0	1	1
Two inch deal four pannel square doors	0	0	10
Do. ovolo and flat front square back	0	1	1
Do. ovolo and flat both sides	0	1	2
Do. six pannel bead, flush, and square	0	1	1
Do. do. ovolo and flat both sides and			
double margins	0	1	6
Two inch and $\frac{1}{4}$ bead, flush, and square			
with sash and shutter in do.	0	1	3
Do. six pannel ovolo and flat both sides	0	1	4
Two inch and half six pannel ovolo and			
flat front, bead, and flush back	0	1	5
Do. bead, and flush, both sides	0	1	8
Do. ovolo and flat both sides	0	1	3
Do. with broad muntins	0	1	5
Do. ovolo and raised pannel both sides	0	1	8
Do. with bead and hollow on the raising	0	1	10

RIGHT WAINSCOT DOORS.

Two inch sash door bottom part ovolo and			
flat, and bead and flush	0	1	10
Two inch six pannel ovolo or quirk ogee			
and bead with double margins, raised			
pannels with astragal moldings and	0	4	6
raisings cross banded both sides			
Two and half inch ogee and raised pannel,			
and square back	0	3	0
Do. sash door bottom bead and flush both sides	0	2	3

MAHOGANY DOORS.

Two inch and half solid mahogany folding			
doors, with quirk ogee and bead, and			
raised pannels both sides, pannels ve-			
neered one side, and astragal or bead			
moldings laid on round the pannels	0	11	0
Two inch blank do.	0	7	0
Two inch and $\frac{1}{2}$ do. flat pannels veneered			
on both sides, with small moldings			
round do.	0	10	0
Two inch do. ogee and flat both	0	7	6

G A T E S.

Two and half deal in 18 pannels and a wicket in do. per foot sup.	o	2	2
Do. in nine pannels, molding on the framing, raised pannels both sides, and a small gate in do.	o	2	9
Three inch deal framed gates in thirty pannels, bead and flush both sides	o	3	4

W I N D O W S H U T T E R S.

Inch deal framed shutters	o	o	6
Do. in two heights	o	o	7
Do. clamped back flaps	o	o	6
Do. do. in two heights	o	o	7 ¹ / ₂
Do. one pannel bead flush and square	o	o	7 ¹ / ₂
Do. two pannels do.	o	o	8
Do. do. in two heights	o	o	8 ¹ / ₂
Whole deal two pannel square shutters	o	o	7 ¹ / ₂
Do. do. in two heights	o	o	8
Do. do. ovolo and flat, front, bead, and flush back	o	o	8 ¹ / ₂
Do. do. in two heights	o	o	9
Do. three pannel bead flush both sides	o	1	o
Do. do. in two heights	o	1	2
Do. four pannels bead butt both sides	o	o	11
Do. do. in two heights	o	1	o
Do. two pannel quirk ogee and bead and flat pannel with molding laid on do. and bead and flush back	o	1	o
Do. in two heights	o	1	2
Inch and half deal two pannel square framed shutters	o	o	7
Do. in two heights	o	o	8
Do. three pannels	o	o	10
Do. do. in two heights	o	o	11
Do. do. bead and flush both sides	o	1	o
Do. ovolo and flat front, bead and flush back frieze pannels	o	o	10
Do. do. in two heights	o	o	11
Two inch deal four pannel shutters, ovolo and flat front, and flush back, in two heights	o	1	8
Do. four pannel, bead and flush both sides	o	1	9

S T A I R S.

Common white inch deal steps, risers, and carriage, per foot sup.	o	o	8
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Do. yellow deal	o	o	o
Do. yellow whole deal	o	o	10
Whole deal, second best do. with molded nosings, close string board	o	1	4
Do. with mitred nosings and bracket string board	o	1	6
Do. of clean deal	o	1	7
Add for circular block to curteel step	o	8	o
Clean whole deal steps, risers (and carriage) to geometrical stairs, on circular plan, risers mitred to string board	o	2	6
Circular string board glued up in thicknesses	o	7	6
Inch and ¹ / ₂ wainfoot steps and risers, with molded nosings	o	2	o
Whole deal raking string board	o	o	9
Three inch deal molded handrail per foot run	o	o	10
Do. ramped	o	1	8
Do. twist	o	8	6
Two inch and half mahogany strait handrail	o	2	6
Do. ramped	o	5	o
Do. twist	o	12	6
Mahogany, writhed, raised, glued in thicknesses, per foot run	1	1	o
Do. solid	o	14	o
Do. cap to iron rail on a circular plan	o	13	o
Do. level	o	8	o
Three inch deal newel	o	o	4
Do. mahogany	o	2	o
Inch ¹ / ₂ deal turned ballusters	o	o	8
Do. mahogany do.	o	1	8
Three quarter wainfoot square balluster	o	o	3
Do. dovetailed to step	o	o	4
Plain block brackets, each	o	1	o
Cut brackets	o	1	8
Mahogany do.	o	3	o

M O U L D I N G S.

Strait stuck by hand, per foot sup.	o	1	o
Raking do. for pediments	o	1	3
Strait moldings to caps and bases of pilasters	o	1	6
Wainfoot moldings, strait	o	1	10
Mahogany do.	o	2	6

B L O C K S.

Ionic, level, and capt, each	o	o	7
Do. raking do.	o	o	9

DAY PRICES OF DEALS, &c.

Thickness	Length of Deals			Pieces of Deal		Length of Battens			Pieces of Battens	
	10 Feet	12 Feet	14 Feet	Run.	Sup.	10 Feet	12 Feet	14 Feet	Run	
	s. d.	s. d.	s. d.	d.	d.	s. d.	s. d.	s. d.	d.	
3 Inch	4 5	5 4	6 3	5½	7	2 11½	3 6	4 2	3½	
2½ inch	3 9	4 7	5 5	4½	6½	2 6	3 0½	3 7½	3	
2 Inch	2 11	3 6½	4 2	3½	5	1 11½	2 4	2 8½	2¾	
1 inch and ½	2 4	2 10	3 4	2¾	4	1 6½	1 10½	2 2½	2	
Whole Deal	2 1	2 6	2 11	2½	3½	1 4½	1 8	1 11½	1¾	
1 inch Deal	1 7	1 11	2 3	2	2¾	1 0½	1 5½	1 6	1½	
¾ Inch	1 4	1 7	1 10	1¾	2¼	0 10½	1 0½	1 2½	1	
Slit	1 2	1 5	1 8	1½	2	0 9½	0 ½	1 1½	1	

PLASTERERS PRICES.

Lath and Plaster, one coat, per yd.	0	0	7½
Do, and fett	0	0	10
Outside do.	0	1	0
Do. not fett but trowelled	0	0	9
Do. two coats and fett	0	1	0
Do. do. not fett but trowelled	0	0	11
Floated lath and plaster, fett	0	1	1
Do. do. fett and white	0	1	2
Bastard finishing on laths, floated and trowelled	0	1	8

STUCCO WORK.

Stucco on bricks, per yd.	0	1	6
Do. on laths	0	2	0
Do. do. in pannels	0	2	6
Rough casting on laths	0	2	0
Do. do. on bricks	0	1	0

PLASTER FLOORS.

Grey, per square	0	2	10
Red	0	3	10

CORNICES, &c.

Plain plaster cornice, per foot, sup.	0	0	9
Dorill do.	0	0	11
Plain block do.	0	1	2
Plain ionic modillion cornice	0	1	0
Do. two members enriched	0	1	7

Do. fully enriched	0	2	0
Corinthian cornice enriched	0	2	7
Composed cornice, 4 members enriched	0	1	6
Architraves, one member enriched	0	0	9
Do. Corinthian, three members enriched	0	1	3

MASONS PRICES.

Portland Stone, per foot cube	0	2	6
Plain work	0	0	10
Moulded work	0	1	0

COPING.

Portland—per foot run	0	1	8
Do. 13 inches wide, 3½ thick in front, and 2 inches thick in back, cramp, and joints leaded	0	2	0
Portland coping, 12 inches wide, 3 inches thick in front, inch ½ back	0	1	6
Newcastle do. with cramp joints run with lead	0	1	6
Do. without cramps	0	1	2
Portland sink, sup.	0	4	0
Newcastle do.	0	3	0
Sink stones	0	2	4

WINDOW SILLS.

Portland, 8 inches wide, 5 inches thick, run	0	1	6
Newcastle do.	0	1	3
Paving, inch and half thick, in strait courses	0	1	7
Do. two inches thick	0	1	10

Paving with black marble dots	—	0	2	8
Channel stone, 7 inches wide, run	—	0	1	6
Purbeck paving, sup.	—	0	0	5½
Do. in strait courses	—	0	0	10
Do. rubbed	—	0	1	3
Bremen paving in tarrace	—	0	1	1

PORTLAND STONE in Chimnies.

Slabs, inch $\frac{1}{4}$ thick	—	0	1	8
Do. inch $\frac{1}{2}$	—	0	1	10
Do. 2 inches	—	0	2	0
Do. 2 $\frac{1}{2}$	—	0	2	2

HEARTHS and COVINGS.

Slit fire stone	—	0	1	2
Purple marble covings	—	0	6	0
Black do. 3 inches thick	—	0	7	6

MARBLE CHIMNEY PIECES.

Blue and white, or veined Italian marble,				
inch thick	—	0	5	0
Egyptian marble	—	0	12	0
Agate	—	0	10	0
Dove	—	0	7	0
Black and yellow plinths, cube	—	1	16	0
Plain jambs and mantle	—	0	8	0

PAINTERS PRICES.

Common colours once in oil	—	0	0	2
Do. twice in oil	—	0	0	4
Do. thrice	—	0	0	6
Do. four times	—	0	0	8
Inside painting primed in size, and done				
twice in oil	—	0	0	4
Second colour and finish	—	0	0	5
Clear cole and finish	—	0	0	3
Once in oil on stucco	—	0	0	2½
Twice in oil, do.	—	0	0	5
Three times do.	—	0	0	7½
Four times do.	—	0	0	10
Do. and fanded	—	0	1	0

SASHES and SASH-FRAMES.

Sash frames each, and sash squares per				
dozen, once in oil	—	0	0	5
Twice in oil	—	0	0	9
Thrice	—	0	1	0
Dead white	—	0	1	3
Clear cole and finish	—	0	0	8
Window lights, thrice in oil	—	0	0	3

GLAZIERS WORK.

Best Ratcliff in squares of three feet sup.				
each at per foot. sup.	—	0	1	10
Squares of 2 feet 6 inches	—	0	1	8
Do. 2 feet	—	0	1	6
Do. common sizes	—	0	1	4

SECOND RATCLIFF and BEST NEWCASTLE

Squares of three feet	—	0	1	8
Do. two feet 6 inches	—	0	1	6
Do. two feet	—	0	1	4
Do. common sizes	—	0	1	2

SECOND NEWCASTLE.

Squares of 3 feet	—	0	1	6
Do. 2 feet 6 inches	—	0	1	4
Do. 2 feet	—	0	1	2
Do. common sizes	—	0	1	0
Newcastle Green, in new fathes	—	0	0	10
Do. stopped in old	—	0	1	0

GLAZING in LEAD.

Best Ratcliff squares, 9 by 7, cemented				
for skylights	—	0	1	2
Do. small squares in do.	—	0	1	0
Second Ratcliff, and best Newcastle in				
squares 9 by 7	—	0	1	0
Do. in smaller squares	—	0	0	10
Small squares and quarries in lead	—	0	0	7
Squares, 7 x 5	—	0	0	8
Do. 8 x 6	—	0	0	9
Do. 9 x 7	—	0	0	10

SLATING.

Westmoreland on boards, nailed with 4d				
clout nails, per square	—	2	17	0
Do. on heart oak, laths and pointed inside	—	3	0	0
Tavistock on boards	—	1	16	0
Do. on oak laths and pointed	—	1	18	0
Welch, on boards	—	1	11	0
Do. on oak laths and pointed	—	1	13	0
Welch rags	—	2	0	0
Welch ladies	—	1	15	0
Do. on oak laths and pointed	—	2	3	0

PAVIORS PRICES.

New purbeck paving, in best gravel, per				
yard	—	0	4	6
Do. five inches deep	—	0	5	0
Do. six inches deep	—	0	5	6
Do. do. hard blue fort	—	0	6	0

Do, taken up and relaid, gravel, &c. included	o	o	6
New pebble paving, not less than 14 inch deep, in gravel	o	3	6
Do. 15 inches deep	o	4	o
Do. from 16 to 18 inches	o	4	6
New Jersey pebble paving	o	4	o
New rags or bowlers	o	2	6
Sqare Guernsey granite, to be 9 inches deep, and 5 inches wide, 6 inches wide for channels	o	7	o
Do. 8 inches deep	o	6	4
Purbeck, or Yorkshire ealing, edge 2 inches	o	o	9
Free stone paving	o	3	6
Moor stone, curb, 12 inches by 7, per foot run	o	1	10

PLUMBERS PRICES.

New cast lead, 6 lb. per foot. at per cwt.	1	6	o
Labour and folder to do. per cwt.	o	2	o
Lead cistern heads, at	1	12	o
Do. and folder, holdfasts and labour	1	14	o
Rain water pipes, per cwt.	1	10	o
Do. and folder, holdfasts, and labour	1	12	o

SMALL CAST PIPES.

Two inch pipe, 28 lb. to the yard	o	6	6
Inch and $\frac{3}{4}$ do. 24 lb.	o	5	o
Inch and $\frac{1}{2}$ do. 20 lb.	o	4	6
Inch and $\frac{1}{4}$ do. 16 lb.	o	3	10
Inch do. 12 lb.	o	2	6
Half inch do. 8 lb.	o	2	o

